DOCUMENT RESUME

ED 413 527 CE 075 272

| | |
|---|---|
| TITLE | Qualification Challenges in the Partner Countries and Member States. Proceedings of the Workshop on Curriculum Innovation (1st, Turin, Italy, September 26-27, 1996). |
| INSTITUTION | European Training Foundation, Turin (Italy). |
| PUB DATE | 1996-09-00 |
| NOTE | 143p. |
| PUB TYPE | Collected Works - Proceedings (021) |
| EDRS PRICE | MF01/PC06 Plus Postage. |
| DESCRIPTORS | *Curriculum Development; *Education Work Relationship; Educational Change; Educational Development; Educational Environment; *Educational Innovation; Educational Research; Foreign Countries; Job Skills; *Job Training; Postsecondary Education; *Problem Solving; Research and Development; Research Utilization; Secondary Education; Teacher Role; Teaching Methods; Theory Practice Relationship; Trainers; *Vocational Education; Work Environment |
| IDENTIFIERS | European Union; Learning Organizations |

ABSTRACT

These proceedings present 10 presentations and 3 working group reports from a workshop on the challenges of the new learning culture and their consequences for the partner countries of the European Union (EU). "Introduction and Summary of the Workshop" (Bernhard Buck) begins with a brief overview of distinctions between the vocational education and training (VET) system; curriculum development; and standards. The second part contains summaries of the opening remarks, the papers presented, and the discussions held during the workshop as well as outputs from three working groups. Part I has four papers on requirements for curriculum innovation: "The VET System and Qualification Needs of Small and Medium-sized Enterprises" (Edwin G. Nelson); "Against Over-Specialisation and in Favour of Flexibility: The 'Correct' Design of Occupational Profiles" (Marian Piotrowski, Henryk Bednarczyk); "The Role of Social Partners in Curriculum Development" (Haralabos Fragoulis); and "The Integration of Research and Development in Curriculum Innovation" (Pavel Petrovic). Part II on problem solving--the new quality of work and learning consists of six papers: "Problem Solving: How to Manage Uncertainty" (Bernhard Buck); "The Relevance of Key Qualifications in the Transition Process" (Janko Mursak); "Choosing the Internet Approach: 'Learning by Doing'" (Robert Blom); "Problem-Solving Tools in a Learning Organisation" (Paul Olry); "The Implications of Ecological Awareness for Problem Solving" (Hilde Biehler-Baudisch); and "The (Re)Integration of Work and Learning" (Andre Hendrikse). Reports of three working groups discusses the following: the learning environment in VET curriculum innovation; the differences between teachers and trainers; and active methods for learning problem solving and open-structured training materials. Appendixes include a participant list and "Phare Projects on Curriculum Development: What Has Been Achieved" (Helene Jourdan). (YLB)

**********
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
**********

ED 413 527

# QUALIFICATION CHALLENGES IN THE PARTNER COUNTRIES AND MEMBER STATES

**Proceedings of the 1st -workshop on curriculum innovation**
**September 1996, Turin**

**European Training Foundation**

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

J Anstey

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

CE075272

BEST COPY AVAILABLE

# CONTENTS


Page

**FOREWORD** 5
Ulrich Hillenkamp

**INTRODUCTION AND SUMMARY OF THE WORKSHOP** 7
Bernhard Buck

**PART I: REQUIREMENTS FOR CURRICULUM INNOVATION** 21

**The vocational education and training system and qualification needs of small and medium-sized enterprises** 23
Edwin G. Nelson

**Against over-specialisation and in favour of flexibility: The "correct" design of occupational profiles** 36
Marian Piotrowski and Henryk Bednarczyk

**The role of the social partners in curriculum development** 45
Haralabos Fragoulis

**The integration of research and development in curriculum innovation** 50
Pavel Petrovic

**PART II: PROBLEM SOLVING - THE NEW QUALITY OF WORK AND LEARNING** 61

**Problem solving: Implications for work and learning** 63
Bernhard Buck

**The relevance of key qualifications in the transition process** 72
Janko Mursak

**The push of information technology in relation to requirements for problem solving** 79
Robert Blom

**Problem solving in a learning organisation** 90
Paul Olry

**The implications of ecological awareness on problem solving** 99
Hilde Biehler-Baudisch

**The (re)integration of work and learning** 106
Andre Hendrikse

**PART III: WORKING GROUPS** 115

**Working group I: The learning environment** 117
Peter Grootings (chairperson)
Grashina Kisuniene (rapporteur)

**Working group II: The role of teachers/trainers** 121
Csaba Fejös (chairperson)
Dan Fagerlund (rapporteur)

**Working group III: Methods and tools** 126
Andrejs Rauhvargers (chairperson)
Sören Nielsen (rapporteur)

**LIST OF PARTICIPANTS** 133

**ANNEX** 137

**Phare projects on curriculum development: What has been achieved?**
Helene Jourdan

# FOREWORD

The European Training Foundation is an agency of the European Union which works in the field of vocational education and training in Central and Eastern Europe, the New Independent States and Mongolia (the partner countries). The Foundation also provides technical assistance to the European Commission for the Tempus Programme. In the field of vocational education and training the European Training Foundation:

- assists partner countries to define their training needs and priorities;
- manages programmes and projects;
- provides information on current developments, initiatives and future needs;
- disseminates information and encourages the exchange of experience.

In this context, the European Training Foundation organised a two-day workshop on "Qualification Challenges in the Partner and Member States", which took place in Turin, Italy on 26 and 27 September 1996.

Many of the partner countries are still in the process of adapting their inherited centrally-planned curricula to the changed conditions of democracy and market economy. These reforms also include measures which create opportunities for more future-oriented policy, such as mechanisms for controlling the input and output of a curriculum through standards and assessments or communication procedures to better link education and the labour market. However, less discussion and measures can be observed about a reprofessionalisation of the workforce to equip their clientele with experience-based competencies, which is a topic for public debate in the Western countries.

The background of this debate is that the economic situation of the industrialised countries has been adapting in response to the structural change of the market — from a supplier-oriented to a demand-oriented globalised market. Propelled by the increased use of new technologies and accelerating environmental degradation, companies are challenged to ensure their competitiveness by transforming organisational and production structures as well as work processes. With new concepts (such as that of the "learning organisation") companies are trying to evolve a general strategy in which their reorganisation of structures is also characterised by improved flexibility.

Also, as a result of these developments, schools for vocational education and training are becoming forced to redefine their curricula, their pedagogy, their teaching and learning methods. The new orientation of education has created a learning culture, oriented to the principle of action and reaction, based on personal experience, ideas and special competencies. This new learning culture provides the context in which people are prepared to (1) develop competencies for lifelong learning and (2) avoid acquiring knowledge which will soon become obsolete.

The aim of the workshop was to bring experts from the partner countries and the Member States together to discuss these challenges and their consequences for the partner countries. The workshop used the components of the new learning culture as a framework for consideration, by examining:

- requirements for curriculum innovation;
- problem solving: the new quality of work and learning; and

- how to learn problem solving — and how to reform vocational education and training to support this.

The main outcome was an increased awareness that there is a difference between a curriculum that is aimed at producing skills and knowledge and one that is oriented on the ability to solve problems:

- problem solving needs an integrated environment of work and learning;
- work organisation, information technology and environmental protection are essential aspects for an at present required ability to act;
- the importance to change the training of teachers and trainers towards the direction of problem solving became evident.

Thirty-two participants representing nineteen countries attended the workshop. The papers presented at the Workshop are reprinted in this volume as "Proceedings". The papers, when taken together, form an excellent framework for innovation which we hope will be used both as inspiration and guidance for curriculum change. And we further hope that the outputs of the remaining workshops on curriculum innovation organised by the European Training Foundation are equally as impressive and productive.

Ulrich Hillenkamp
Deputy Director of the European Training Foundation

# INTRODUCTION AND SUMMARY OF THE WORKSHOP

**Bernhard Buck**
**European Training Foundation**

## I. Differences between Vocational education and training systems, curriculum development and standards

Experience in EU countries and the countries of Central and Eastern Europe has shown that curriculum development is a key, strategic area in vocational education and training reform. But, at the same time, curriculum innovation is a complex process, not simply a mere response to ongoing changes in the labour market. It must take into account overall changes in society, in the economy and in the field of science and technology.

When it comes to planning and regulating vocational education and training, curriculum development is one of several major areas which must be considered. In the context of the Workshop, distinctions were made between the (1) vocational education and training system; (2) curriculum development; and (3) standards. The following provides a brief overview of each.

### *A. The vocational education and training system*

#### 1. Different vocational education and training approaches

There are a variety of approaches being used in the process of vocational education and training system restructuring. To simplify matters somewhat, two major approaches emerge:

*a) A State-oriented (centralised) approach*

- occurs within a State-economy, e.g. the former Soviet Union
- occurs within a market-oriented economy: school- or college-oriented vocational education and training system; the State develops and regulates the vocational education and training system in all important areas.

*b) A market-oriented (decentralised) approach*

- *consensus-oriented vocational education and training* occurs within a decentralised, federalist social structure in which there is a precise division of tasks between the public and private sector, and among the federal government, the states and local authorities;
- *company-oriented vocational education and training* is not institutionalised to any great degree; it is based on the specific requirements of individual companies. There is no clear distinction between initial and continuing vocational education and training; and the social dialogue between employers and workers (or between employers associations and unions) is biased towards the employers.

Based on these distinctions we can further differentiate between

- school-based vocational education and training;
- a dual system; and
- on-the-job training.

**2. Links among educational subsystems**

How a vocational education and training system is linked to *general and higher education systems* is also of critical importance when building or revamping a vocational education and training system. The Phare countries use two main approaches. One aims at establishing secondary general education followed by vocational specialisation. (This view is much propagated by the World Bank.) The other promotes modern forms of vocational education and training with transparent transition options to higher education.

## *B. Curriculum development*

As the term itself indicates, the word "curriculum" stresses the importance of an individual's preparation for the future. In addition, the term "curriculum" connotes "political" vocational education and training to the extent that personal and social (individual) qualifications are supported. Indeed, the leading principle of a given curriculum is not so much the way it represents a discipline or profession — through a particular subject-specific system — but whether the abilities and capabilities acquired through it will be of use to its clients in their future lives. Accordingly to this principle "Curriculum development" requires designers and developers to make decisions about vocational education and training goals, content, methods and tools.

Given this background, it may thus be stated that when the term "curriculum" is used in the vocational education and training context, it not only implies *goals* and *content* but also encompasses *planning, organisation* and *assessment* of teaching and learning processes as well. Those to whom the curricula are addressed are learners (students of initial and further vocational education and training) and teachers/trainers.

**1. Curriculum orientation**

Fundamental for curriculum development is what is called "*curriculum orientation*". Curriculum orientation reflects changes in society, in the economy and in the areas of science and technology. In particular, the relevance of curricula to vocational education and training is achieved through the interaction of work and learning. But there are some major difficulties which must be overcome to make this happen.

***a) School-orientation of learning***

In many partner countries, work and learning occur in different subsystems of the society: (1) work takes place in the economic system; and (2) learning takes place in the vocational education and training system. Of course, to make both systems more permeable should be a political priority; however, to bridge the gap between business and schools and this is important to all vocational education and training systems where schooling has priority must also be an important requirement of curriculum development.

Depending on the learning organisation, the learning itself can have various levels of work potential. The interaction of these levels may be minimal under conditions in which schools are treated as isolated institutions without links to the working environment. Under these circumstances learning is reduced to those routine, standard

school duties which are dominated by a teaching style characterised by frontal, lecture-style instruction.

The relationship between levels will increase under circumstances in which schools are influenced by economic and social change. Under these circumstances schools must respond to levels in such a way that their bureaucratic and teacher-oriented learning organisation will be weakened. Indeed, the curricula developed by these kinds of schools will contain an essential, professional-orientation element as an indispensable prerequisite for the country's economic and social development.

In schools, the relationship between learning and work tends to increase, particularly under conditions in which pupils and their parents are somewhat influential, where the schools are in continuous communication with their regional environment and where they must compete with other schools. Under these conditions, the schools must focus their services on the needs of their clients who are demanding curricula which address individual capability building and problem-solving techniques. These learning needs can only be met by curricula which extend beyond narrow disciplines and integrate the production- and market-oriented service spheres.

*b) How work is organised in companies*

What has been said about the meaning of the learning organisation in schools in relation to learning and work can be said (almost in the same words) about the meaning of "work organisation" in relation to work and learning in companies.

Depending on the way work is organised, the work itself may have various levels of learning potential. The interaction of these levels may be minimal under conditions in which work is reduced to routine and standard duties and where work refers to procedures which, to a large extent, are organised tayloristically or bureaucratically.

The relationship between levels of work will increase under circumstances in which companies must respond to market needs which can only be fulfilled by weakening the tayloristic/bureaucratic way work is organised. Then the structure of skills will tend to develop in the direction of those competencies which reflect the mastery and integration of hitherto isolated and fragmented domains within the company.

The relation between work and learning tends to increase in companies where the customer is in a comparably strong position: The companies must focus their production and service goals on the specific needs of individuals and must try to satisfy customer needs while competing with other companies. Therefore the skill structure makes problem-solving and entrepreneurial capabilities its priorities.

## 2. Understanding work

In terms of understanding work a distinction can be made between *technology-oriented work* and *situation-oriented work*:

- *Technology-oriented work* can only be done in a certain environment. The company regulates work: (a) where technical rationalisation is the priority and where the human factor is secondary; and (b) where the priority is retaining and enriching the experience and skills of the workers within the working process.
- *Situation-oriented work* must be carried out in a climate of uncertainty regarding possible consequences. Therefore the company is forced: (a) to use the workers' creativity to solve problems; and (b) to assume the workers are responsible.

## 3. Understanding vocational education and training

Given the work orientations as described above, the respective vocational education and training curriculum orientations that follow from these are:

- *Technology-oriented vocational education and training* which (a) prepares trainees to carry out duties prescribed by a third party (Specialised Competency); and (b) equips trainees through a self-directed and self-monitored learning process whose outcome is the trainee's ability to perform an occupation (Occupational performance competency).
- *Situation-oriented vocational education and training* which enables trainees to act self-reliantly in uncertain and unstructured work situations and environments (Individual ability to act).

## 4. The related understanding of competencies

- *A specialised competency is the* ability to carry out specialised duties in the correct specified manner. Both the way to work and the work goal are clearly defined; the training is geared towards carrying out duties within an occupation, dependably; learning is defined as the acquisition of skills and knowledge.
- *An occupational performance_competency can be defined as* enabling the well-executed performance of tasks. The goal of the work is defined, but the way to reach the goal is open; training is geared towards the self-reliant fulfilment of all tasks within the occupational spectrum; learning is understood as the learner's acquisition of performance through:
  - *self-competency* (the ability to have a disciplined attitude towards a defined goal);
  - *social competency* (the ability to cooperate as needed); and
  - *method-competency* (the ability to independently plan, perform and monitor al the measures necessary measures to achieve goals efficiently.

- *The individual ability to act can be described* as the ability to perceive the uniqueness of the situation and to act accordingly; the initiative of the learner; the learning process promoting the learner's performance through:
  - *self-confidence*, i.e. the ability to perceive uncertainty as a possibility for creativity;
  - *communication*, i.e. the ability to express one's point of view, to honour the opinion of others and to come to agreement;
  - *the ability to shape*, i.e. to find a particular solution which fits the circumstances.

## *C. Standards*

The term "standards" accentuates the requirements of the society to develop its members for a functioning democracy and a competitive market economy. The Foundation's Advisory Forum, Sub-Group C, "Standards in vocational education and training" defined three models:

- *The Examination model* is an output model in which the qualification process itself is not covered;
- *The Professional model* has three components: (1) initial requirements or prerequisites; (2) description of the training course (length, content, structure); and (3) examination standards;
- *The Modular model* only determines standards for certain occupations .

Within the context of the professional model, Sub-group C defines standards as a "general description of working tasks which have to be practised within the framework of the relevant profession, as well as presentation of the appropriate knowledge and skills".

### 1. The functions of standards can be

- An assurance of quality;
- A guarantee of transparency;
- The comparability of leaving certificates; and
- A guarantee of adequate wages and salaries for entry into a profession.

### 2. Obligations of standards

Standards should:

- have legal status;
- have a nation-wide area of application;
- involve all relevant groups (cooperative model);
- be controlled by the State body; and
- provide school leavers with the option to start an academic career.

### 3. Challenges

Indeed, standards should give latitude to a wide spectrum of curriculum orientations. Unfortunately, many standards still include a catalogue of behaviour-based learning goals whose achievement is required to attain certain skills and knowledge. Curricula which are developed on the basis of these standards support a technology-oriented vocational education and training and therefore lean towards standardisation and routine. Curricula orientations which stress the situation and the individuality of learners need a framework which incorporates the ability to solve problems in uncertain environments.

## II. Summary of the Workshop

The following section contains summaries of the opening remarks, the papers presented and the discussions held during the Workshop as well as outputs from the three working groups.

### *Part I: Requirements for curriculum innovation*

#### 1. **"The vocational education and training system and qualification needs of small and medium-sized enterprises"** by Edwin G. Nelson

Based on the trend in the EU for more people to be self employed (one in nine in some countries) it is of great importance to prepare young and adult populations for entrepreneurial options. The number of workers in the future who may become self employed at some time in their careers may be even greater. Readying these populations for self-employment is the overall challenge for education and training policy makers in the EU and partner countries. The topics: (1) routes to self-employment and entrepreneurship; (2) qualifications and self employment; entrepreneurship: the learning process; (4) phases of business development; and (5) assessment of entrepreneurial competencies were presented. Some key conclusions were that that it is necessary to: (a) establish a vocational education and training career path for potential and existing entrepreneurs; (b) recognise *personal competencies* as the key to effective entrepreneurship; and (c) develop a qualification system compatible with self-employment and the process of learning entrepreneurship.

***Discussion/Commentary/Questions and Answers***

A participant from Slovenia commented that Slovenia's educational system had been providing basic knowledge about entrepreneurship in vocational schools for at least three years, that teachers had been trained in England, and that the Craft Chamber gives a week-long training course to promising students in which trainees produce a business plan. Other comments involved requirements for training people to find and manage self employment. One key comment suggested providing training in entrepreneurship early on in the general school curriculum as well as later, to school leavers.

2. **"Against over-specialisation and in favour of flexibility: The 'correct' design of occupational profiles"** by Marian Piotrowski and Henryk Bednarczyk

The importance of vocational education in Poland's educational system is demonstrated by the high numbers of students involved in vocational training. As of 1996, 68% of all pupils leaving primary school go to one of the almost one thousand vocational schools in Poland and 1.8 million young people participate in vocational education. Employers now expect competence and mastery over processes, production and service operations. However, Poland's over-specialised vocational education system had produced graduates who lacked vocational mobility; had little acquaintance with modern technologies and had insufficiently mastered fundamental practical skills.

Poland's vocational education and training reform was driven by the market economy and involved eliminating many occupations and designing fewer, new occupational profiles. The work undertaken involved: (1) a new model for educational-planning records; (2) a modular educational curriculum package; (3) the implementation of the British system of quality assurance and control (called National Vocational Qualification) in some Polish schools; and (4) the introduction of a new kind of school — the Technical Secondary Schools — which educate students in twelve occupational profiles as follows: economics-administration; social; service-economics; creating environment; mechanics; electricity-energy; electronics; chemical; agricultural-catering; wood and forestry technology; textiles, communication and transportation. The position that vocational education should be reformed simultaneously with the educational structure and educational programme formats was underscored.

***Discussion/Commentary/Questions and Answers***

A participant from Russia asked if Poland combined vocational education and training SME development programmes with the needs of successful business. The presenter answered yes, stating that elaborate work had been done on the classification system and the work being done now focused on quality control. A comment was made on qualification systems by a participant from Denmark who stated that many countries are working on developing qualification systems to "European standards", believing that there is one, but, he said, there is no one European standard. MP responded that there were, however, accepted levels, national standards, for some professions such as mechanical repair. A short exchange took place on the subject vs. modular approach in which the presenter stated that the basic vocational level, not the academic level, is more connected to a free market economy and that their curriculum was subject-based using a modular approach.

3. **"The role of social partners in curriculum innovation"** by Haralabos Fragoulis

Common trends and challenges in developing *social dialogue* in the partner countries were described in relation to social partner participation in the vocational education and training system reform process - in terms of levels and forms of participation, the nature of competencies and key areas of involvement. Some examples of the EU's wealth of experience with bilateral and government agencies at the national and sectoral levels were presented involving: (1) the development of curricula which anticipates skill trends; and (2) employers' organisations in different EU countries which help to identify skill needs, establish training plans and create occupational standards. The EU's contribution to research activities was described, including Italy's work on professional profiles; and innovative international partnerships involved in developing curricula and new profiles. The program in Austria, as well as programmes run by trade unions addressing the needs of low-skilled workers were given as examples of how social partners do act as training providers.

***Discussion/Commentary/Questions and Answers***

A participant from Slovenia commented that trade unions were weak in that country because workers lacked the personality and sensibility for trade union participation and added that the European Training Foundation might provide, through social partnership, support for trade union co-ordination. The commenter emphasised that workers and trade unions should be better linked because apprentices are sent into the work environment without co-ordination with trade unions. The participant from Russia then asked HF to describe Foundation's main social partners in vocational education and training. HF replied that it was not wise to speak about models because there was no largely-accepted model and stated that the subsidiary approach is definitely one form, but that, in reality, social partnership has very different forms, based on the balance of power.

4. **"The integration of research and development in curriculum development"** by Pavel Petrovic

The basic principles underlying current curriculum development in the area of vocational education are flexibility and adaptability. Curricula must also be organised to ensure comparability of the education given across schools. There must also be sufficient room for interested schools to initiate and participate in the process. The curriculum development process should take place in two stages at the national and school levels and should be based on the key skills and knowledge common to several occupations and linked to labour market requirements. Three future objectives are to: (1) act to promote cultural dialogue; (2) promote technical skills; and (3) develop a network of partners to follow developments in the EU.

***Discussion/Commentary/Questions and Answers***

A participant from Albania asked if The Czech Republic had any feedback on pilot activities using the modular approach. PP replied that there was much experience which showed that it was useful to combine a modular structure with a normal subject structure, during the last years of school when students have subject choices. The participant from Poland commented on the extent of state and local innovations and asked about the role of research in a decentralised situation. PP responded that his institution played both a direct role in school discussions and a consultative role through experience in Phare programme pilot schools.

***Part II: Problem solving: the new quality of work and learning***

1. **"Problem solving: Implications for work and learning"** by Bernhard Buck

Traditional vocational education programmes (which focus on rigorous technical standards) follow a concept of "specialised competencies" which train personnel to perform tasks in a correct, specialised manner. There are new criteria — based on problem solving — which must be considered, given the context of "uncertainty" in which work takes place. Problem solving is "the ability to cope with manifold practical situations" and is an everyday, ordinary ability which everyone is forced to develop. No superior chooses your mate or buys you your computer. However, what workers do in private life is forgotten in the workplace. Further, conventional curriculum approaches foster dependent behaviour which is, in turn, taken to the workplace.

***Discussion/Commentary/Questions and Answers***

A participant stated that "uncertainty" is the real paradigm of an innovative vocational education and training system. He stated that the time for certainty is over and challenged the group to look at the labour market, the atmosphere in the country. He stated that skills and knowledge are not enough. The total environment has changed. Workers need the ability to act decisively.

2. **"The relevance of key qualifications in the transition process"** by Janko Mursak

"Qualification" must be seen as a social category, closely related to an individual's social and vocational identity. In the ambiguous situation of the transition process, emphasis should be given to developing all key qualification dimensions, as they are the key elements in successful transition. Key qualifications are not only a composite of the skills necessary to execute tasks but have social, technical and educational dimensions.

The notion of "key qualifications" may be viewed as transferable qualifications, common to different occupational families, and of crucial importance for the adequate preparation of an individual's vocation and his/her placement in the labour market. He emphasised that it was possible to identify common "key qualifications" within different vocational education and training systems.

***Discussion/Commentary/Questions and Answers***

The participant from Russia stated that the Russian experience showed that three dimensions (society, teachers and education) were very important. He then emphasised that the most important aspect of teachers is quality and that the social and educational dimensions must somehow train learners "how to do" things because, he said "they were not taught how to learn." Then he asked, "Do you agree that the working environment can be restructured?" JM agreed and reiterated that "the work environment must become a learning environment for SMEs to succeed." But then he added that it was hard to get practical experience for trainees in big companies." Asked why was it hard, he replied, because " organisations are in a crisis. They are in the process of privatisation or have just been privatised. Their managers do not see that training is important and it is hard to move them."

3. **"The push of information technology in relation to requirements for problem solving"** by Robert Blom

Information and communication technology (ICT) means far more than just computers, cables and data. ICT is a tool which supports processes like research, education and facility management. When Internet appeared on desks in 1995, ICT became a part of internal and external organisational communication. Internet provides not only new channels for external relations through more information and communication facilities, but new ways to present educational services via multi-media and hyper links. A cartoon of people in a train illustrated the point that, through the Internet, "we don't know where we're going, but we're on the train and it's going somewhere" . Internet is also the IP (the international protocol), the world-wide standard, for new generations of both application and operating software and therefore for hardware platforms. Why is information technology such a rapidly growing business? Some answers are: (1) data handling; (2) electronic mail; and (3) work flow management, including controlling who gets what.

***Discussion/Commentary/Questions and Answers***

The first comment was from a participant who maintained that it would be difficult to develop universal courses and there was the problem of translation. Another stated that whole courses could be transferred, that computerised modules provide inspiration rather than solutions and another said that in Africa there were projects which used old, existing satellites for distance learning programmes. RB replied that there were good connections with firms for business development in conjunction with education, that telecommunication firms and telephone firms were interested in distance education and that if someone else developed interesting materials and packaged them, these firms would transfer the information.

4. **"Problem solving in a learning organisation"** by Paul Olry

A "Learning Organisation" is a firm which gives priority to training and one in which work situations are used for all kinds of learning. The training done in a learning organisation takes two main forms: (1) formal training organised through in-company training centres; and (2) informal training which occurs in different production workgroups (for instance when a small group is building the job reference for a vocational qualification). In these two cases *problem solving* is the heart of the work of upgrading qualifications There are some key questions which must be asked:

1. Where is the company's real problem in getting industrial results? in its organisation, process or workers?
2. Once the problem is identified, how should it be analysed? and
3 Who should make decisions to resolve the problem?

***Discussion/Commentary/Questions and Answers***

The first questions from the floor were " Who is responsible for skills and company centres for learners? Does the Ministry of Education control in-company centres?" PO replied yes, there was a mix of company trainers and ministry trainers. The participant from Bosnia then asked "Who recognises these qualifications?" The presenter answered that there was a debate in France and the process was complicated. He said that the French Ministry of Education has the power to control the diploma and firms have the authority to recognise on-the-job qualifications. Trying to match the two is difficult. He concluded by saying that national diplomas, in industrial fields, *are already* linked to real jobs and to the labour market at three levels for: (1) upgrading qualifications; (2) the workers; and (3) the product team.

5. **"The implications of ecological awareness on problem solving"** by Hilde Biehler-Baudisch

Training needs of companies participating in the *Community Environmental Management and Audit scheme* were investigated. "Ecological awareness" is considered necessary but not enough of a basis for workers to adopt a proactive approach to environmental problems at their workplace. Research in environmental education has confirmed a discrepancy between "environmental awareness" and making "*an active contribution to solve environmental problems.*" Environmental training must develop personal competencies for problem solving and link them to ecological aspects, as environmental damage is directly linked to future economic and social degradation.

*The 50% model* shows how schools can cut down their expenses by systematically reducing their energy or water consumption or waste "production". As 50% of the savings is paid to the school, there is a permanent economic benefit for better environmental performance. In the framework of this project, vocational schools developed strategies to protect the environment and reduce costs. The involvement of students — in active and practical environmental protection measures linked to economic measures — is an example of problemsolving which integrates future-oriented qualifications. "Do you think modular curriculum innovation can adopt longer-term projects and interdisciplinary assignments?"

***Discussion/Commentary/Questions and Answers***

The participant from Denmark said that vocational school projects in Lithuania, Estonia and Latvia had excellent results with pipe-fitting. New fittings halved water consumption and, not only did the students learn, but a business was born. One person asked the presenter about the 50% model example, asking, "When students solved these problems did the institution integrate their skills into the qualification process?" She answered "yes," one school cut down by 30% and not one student failed the exam.

6. **"The (re)integration of work and learning"** by Andre Hendrikse

A "too formal and structured approach to learning" has led to a situation in which only educational and training competencies were developed. Education and training are responsible for only a small share of the learning process. It is widely recognised that the daily working place is a key venue for learning and that the learning that takes place at work has a much greater impact and meaning than formal, structured training outside the working context. Further, (a) competitiveness is based on knowledge, not on cheap labour; (b) human resources development should examine not only learning capacities, but life at work, stress, absenteeism; (c) the learning process is dynamic and shifting; and (d) soft skills and attitudes are important, in both formal and structured as well as informal and unstructured contexts.

***Discussion/Commentary/Questions and Answers***

The participant from the United Kingdom commented that in the UK there was an attempt to accredit work-based learning. AH commented that when learning is perceived as a reward, workers become strong enough to find another job. Another participant noted that the labour unions are calling for more education. A response was that the next step was more training and development, but why train them for the competition? The participant from the UK described the situation in the UK. He said in the UK we have created "assessors" who assess the work. This has moved the inputs from the trainer. What is the evidence and how is it judged consistently? In a quality assumption system, the assessor plays the key role.

## *Part III: Working groups*

1. **Working group I: The learning environment**

Group I had had a serious discussion about the learning environment and vocational education and training in the context of the struggle partner and Member States were having with the economy and education. Some of the issues the group considered were: "Why change the curriculum. Why curriculum innovation? Where should new curricula be placed? How should it be changed?" They concluded that "problem solving can be a catalyst for change and that vocational education and training changes must take place in the curriculum, the school, the teachers, the enterprises — as well as the family and the students." She added that teachers are not convinced that curriculum innovation is necessary and the enterprises are not yet involved. They further concluded that curriculum innovation is impossible without teacher training and that a role the European Training Foundation could play is to demonstrate to teachers the importance of the new learning environment.

## 2. Working group II: The role of trainers/teachers

Group II explained the differences between teachers and trainers in terms of (1) their different education; and (2) their role. As understood by the members of Group II, "trainers", as distinguished from teachers in schools, were "trainers in companies." Sweden uses a "holistic" approach to vocational education. The model looks at knowledge in its entirety as made up of quadrants of facts, skills, understanding, and confidence. Facts are knowledge as information; skills involve doing or executing something; understanding provides a sense of meaning; and confidence is a result of experience. The holistic model is not a hierarchy but a continuum. The Group believed there would be new roles for teachers and trainers in the future, but the question remains how to develop learning situations that move toward a more open structure, which is active and self organising.

## 3. Working group III: Methods and tools

Group III's discussion involved three clusters of issues surrounding the question of how to develop new methods for problem solving. One question the group discussed was "what do we define as problems?" Another was, "f we introduce student-activating methods, what kinds of requirements must we have?" He described the issues in "Teachers and students" and said the dilemma for teachers was, "if I use these new methods how can I be sure my students will learn chemistry, if the process involves more and more individual instruction." Referring to Bernhard Buck's example before, Mr. Nielsen pointed out that the student was the client and we had better sell him a pair of pants that fit.

***Discussion of Working Group Issues***

One participant asked if the European Training Foundation could facilitate an exchange of experience and another asked "What are you doing with the results of this discussion?" He answered that the results would provide information on how the European Training Foundation might focus its future efforts and asked the group to respond to the question of what they expected from the European Training Foundation. He also asked, "How can the European Training Foundation continue this work in the dialogue and preparation of new programming?" The participant from Russia responded that the main goal was to enrich the content of vocational education and training, especially for countries in transition.

A participant from Poland suggested moving in the direction of work-based learning, but pointed out that the availability of firms is decreasing and that the problem is how to find alternatives when enterprise is no longer available. He added, "teachers become responsible for work-based learning" and we have similar problems in our own countries and then asked, "What are the alternatives for practical, how-to-do work experience? He concluded by saying "if we ask teachers to change curriculum then let them change it." The participant from Slovenia stated that her country was well-prepared for training next year in SMEs and that 3000 places had been organised and checked by the Chamber and that the work was through inter-company centres. She concluded that inter-company centres often give good quality training. Bernhard Buck then asked, "Do you try to find places to make a bridge between learning and working or do you stick to a school-based educational and training approach?"

The participant from Albania responded that they can find places in more small enterprises and then gave the example of the agricultural school collaboration with farmers in which the school provides the equipment and the students and the farmers have the land. The participant from Hungary added that in his country three-year schools provided the skills and students started at the age of fourteen (14).

## 5. Future Involvement of the European Training Foundation

Hans Konrad Koch then asked, "What do you expect from European Training Foundation in the future?" The participant from Bosnia responded that they expected a lot because the three parties involved cannot find a way by themselves. They need a neutral party. They need to encourage half of their population to come back. Bernhard Buck expressed his deep feeling and said that the European Training Foundation was committed to finding a first step in rebuilding the vocational education and training system in Bosnia and that there was to be a donor workshop on October 29 to provide synergistic assistance. The participant from Denmark said that the Bosnian refugees in Denmark were well integrated and trained and might be able to provide training assistance. He added that there were 2 million Bosnian refugees around the world.

The participant from the UK responded to Mr. Koch's question by stating that follow up might include setting some priorities for action, focus groups on the policy level (without which one cannot move forward) and on the technical level (to develop curriculum methods). Another suggested a "Conference on Key Qualifications" because Western countries do not recognise the qualifications of Member States. Someone else asked "How do we determine standards that don't exist? The participant from Lithuania responded that inside the EU Member States there was transparency of qualifications and competencies. And he responded, transparency is the most important.

A participant from Slovenia stated that what was necessary was to "forge teacher training, trainer training and partner dialogue. That the European Training Foundation should forge partnerships with vocational schools in a variety of countries. She turned to the participant from Bosnia and added that some partners have experience and that they could help. The participant from Albania stated that the job of this Workshop was to identify problems, not to solve them, and that the follow up should focus on problems of teachers, quality assessment and accreditation of programmes.

# PART I:

# REQUIREMENTS FOR CURRICULUM INNOVATION

**The vocational education and training system and qualification needs of small and medium-sized enterprises**
by G. Nelson

**Against over-specialisation and in favour of flexibility: The "correct" design of occupational profiles**
by Marian Piotrowski and Henryk Bednarczyk

**The role of the social partners in curriculum development**
by Haralabos Fragoulis

**The integration of research and development in curriculum innovation**
by Pavel Petrovic

# THE VOCATIONAL EDUCATION AND TRAINING SYSTEM AND QUALIFICATION NEEDS OF SMALL AND MEDIUM-SIZED ENTERPRISES

**Edwin G. Nelson**
**Durham University Business School, United Kingdom**

The overall challenge facing policy makers in EU and partner countries is to provide populations of young and adult people (each of whom may be the one in nine in the EU who could become self-employed) with the entrepreneurial competencies they need to cope successfully with the self-employment option. Entrepreneurship involves the application of a combination of functional and personal competencies.

Considerable progress has been made in defining and assessing functional competencies but there has been less clarity and development concerning personal competencies. This is partly because there have been insufficient debate and innovative thinking about the purpose of qualifications, the distinctive features of the entrepreneurship role and how it is learned, and the most appropriate methods of facilitating the learning process. Designing and implementing training and assessment strategies to develop personal competencies for enterprise and entrepreneurship now present the real challenge for policy makers, trainers and developers of vocational education and training systems.

## A. Introduction

Vocational education and training reform is a component of the strategies that can be implemented to support economic change and transition. Indeed, there *has* been a coherent response from within the vocational education and training system, as shown by some developments of the last decade, as follows:

- Because of new materials, the technological revolution and other industrial changes (which result in a shorter life-span for occupational roles and more frequent career changes) more continuing vocational education and training opportunities are now provided for adults. Further, pedagogical methods have been adapted to the needs of adult learners.
- Because of the need for greater labour mobility among similar jobs in different organisations, functional competencies have been analysed and defined as sets of standardised competencies (for example, the UK system of national vocational qualifications). These may be assessed for qualification purposes or, if required, as a basis for harmonising standards across the boundaries of EU Member States.

- Because of the growing demand in industry for higher-level skills, competency frameworks have been produced for occupations in which there are increasing levels of functional autonomy, at the technician level, management and in other professional positions.
- Because of the need for a standardised, quality-assurance system, the assessment of functional competencies has been developed as a sophisticated system of evidential rules, procedures and quality checks.
- Because motivation and personal competencies — such as problem solving, communication and inter-personal and social interaction — the effective application of functional skills, specific curriculum has been provided for them in "general vocational qualifications" (for example, GNVQs in the UK), although personal competencies cannot yet be assessed as specifically as are functional competencies.

At the centre of the social, economic and technological changes mentioned above is the development of some SME sectors which are expanding as a result of industrial restructuring. (And, as will be shown later, SME-sector developments present vocational education and training with a number of challenges.)

The specific reasons for this expansion vary. One is that many of those made unemployed through industrial restructuring start their own small businesses on the basis of their craft skills. Another is that this post-industrial period has brought about an explosion of new business opportunities and markets. These markets and business opportunities are too small, or innovative, or uncertain or simply go unnoticed by larger businesses; however, they do attract entrepreneurial individuals with relevant market or technical knowledge who are prepared to risk personal assets and to leave relatively safe employment. Another reason is the tendency among larger firms to down-size, to create smaller, more manageable profit centres, to spin off non-core operations as independent small businesses, or to out-source supplies and services to other, smaller enterprises.

As the SME sector grows, as opportunities for small businesses to engage in international activities increase across the community of States and as new communication systems and markets enable SMEs to internationalise activities, they begin to match the large-firm sector in job creation and gross national product. In the partner countries, the rapidity with which SME sectors have emerged during economic transition has been quite spectacular[1] and is becoming one of the principal factors in economic integration and convergence with Western economies. For these reasons, the SME sector has been a priority area in the EU Phare and Tacis programmes of support for transitional economies.

The increasing political interest in the creation, survival and growth of SMEs brings into focus the quality of practical entrepreneurship and the way in which entrepreneurs learn. This, historically, has been a process of trial and error and largely unguided experiential learning by enterprising individuals who apply a combination of personal and functional competencies to opportunities and problems. Bringing SMEs to the fore in vocational education and training system priorities raises questions about what can be contributed to the processes of entrepreneurship learning and competency development. Many of the problems and support needs of the SME sectors in Member

---

1 a) D. Hubner: *Institutional support for small businesses in Poland: lessons for Central and Eastern European countries*. Plenary paper to the Budapest Conference of Donors Committee for Small Enterprise Development, p. 12. (June, 1995).
b) V. Ermakov: *Government policy in relation to SMEs in the Russian Federation*. Paper of the Russian Small Business Support Agency at Budapest Conference of Donors Committee for Small Enterprise Development. p. 11 (June, 1995)

and partner countries are similar.[2] However, partner countries, in particular, have the opportunity to find answers to these questions because the development of both the private sector and the SME sector are parallel, long-term processes for which fundamental changes in culture and attitudes (or "mentality") are crucial, requiring radical measures.

## B. Vocational education and training and entrepreneurship

In the current climate of international concern for SMEs and entrepreneurship, the role of education is being examined. Whole education systems are being reviewed critically from the point of view of the contribution they can make to the changes necessary to support the small, private-enterprise sector[3]. Analyses of the issues are tending to conclude that entrepreneurship, like citizenship and work ethics, should "permeate the entire educational system" from "the youngest possible age" "as a recurrent form of training."[4] Over the last two hundred years the meaning of the word "entrepreneurship has evolved as the industrial environment has changed. The importance of the SME sector can be used as an argument to justify a more comprehensive role for vocational education and training systems to support entrepreneurship programmes. Now, in the SME sector, "entrepreneurship" can be said to mean "the search for business opportunity and business improvement".

The purpose of vocational education and training is to guide and enhance the learning process and to provide suitable access and progress towards qualifications (both for students and adult learners) along different routes — from basic vocational education to continuing professional training and development. The relevance of vocational education and training support is achieved through the interaction of learning and experience and the complementary nature of the learning processes in education and training and practical work situations. To achieve this relevance for the SME sector, business development processes, the learning experiences they provide and the vocational pathways which can lead to self-employment in SMEs must all be taken into account. The educational component of vocational education and training can enhance cultural awareness and attitudes towards work, business and entrepreneurship, which are especially relevant when economies depend on large numbers of people (either by desire or force of circumstances) choosing the option of self-employment.

The traditional focus of vocational education and training systems — on occupational roles defined by precise job descriptions based on approved tasks, procedures and functional skills performed under some form of supervision or direction — is still generally maintained. In contrast, entrepreneurship may be described as a role performed with complete or a high degree of autonomy, in an uncertain environment, which seeks to achieve personal as well as business

---

2 A. A. Gibb and Z. Haas: Developing local support for small business development in Central and Eastern Europe — the donor challenge. In: *Entrepreneurship & Regional Development.* Vol. 8, pp. 197-210. 1996.

3 a) A. A. Gibb: *Education: its relevance and support of the development of small enterprise.* EU Preparatory Conference on Small Enterprises. Dublin, June 1994.
b) A. A. Gibb and M. Saleh: Universities, small businesses and entrepreneurship education: towards a holistic approach. *Small Enterprise Development,* Vol. 1, No. 4, pp 27-36 1990.
c) Durham University Business School, Small Business Centre. *SME-related education in Romanian secondary schools: a study and recommendations for development.* Report on a Phare project Durham 1994.
d) Durham University Business School, Small Business Centre. *Developing self-employment capability in vocational training and education in Poland.* Report on a British Know-how Fund Project 1996.

4 Conclusions of the 6th Annual Conference on Internationalising Entrepreneurship Education and Training (IntEnt96). Arnhem and Nijmegen, the Netherlands, pp. 24-26th June, 1996.

objectives and which relies heavily on intuition. In this context, an appropriate set of core personal competencies is a crucial requirement. The role cannot be fully understood without appreciating the nature of the challenge faced by owner-managers of small businesses, which is apparent in the following description:[5]

> *In SMEs that are owned and managed by an entrepreneurial individual, team or family, personal and family assets are at risk. Being a small-business entrepreneur means operating independently with limited resources in uncertain situations and dealing personally with customers, suppliers, regulatory authorities, banks, accountants, lawyers, landlords or property agents, and others. Managing these transactional and regulatory relationships is at the core of a way of life in which business networks become social networks affecting the entrepreneur's ego and social standing in the community.*
>
> *The entrepreneur's task structure is created by himself/herself and is multi-disciplinary. Rewards and business fatalities are directly linked to the competence with which they are performed. The entrepreneur and the business is as one: neither can be developed separately from the other. Personal relationships and the "culture and climate" they create within an SME organisation are more important to its maintenance than formal systems and promotions.*

The last point mentioned in this description, concerning the "climate and culture" of personal relationships, indicates that the working environment in an SME is more intimately influenced by the entrepreneur, whose style of management is likely to be more idiosyncratic and pragmatic than professional, and vastly different from the norms of corporate and professional culture in larger firms. Employees are expected to be adaptable to the culture, to be committed to the success of the entrepreneur's business, to be flexible with regard to their own roles and tasks, to assume personal responsibility for task performance and to be enterprising and inventive when faced with obstacles and problems.

Vocational education and training systems normally assume a degree of predictability regarding career development. Once an individual's choice of occupation has been accepted, then vocational education and training offers a curriculum for progressive learning and development jointly approved by employers and educationalists. But the situation is changing. In the EU it can be predicted that about half of the workforce employed in private-sector organisations will be in SMEs, and it can be predicted that about 10 percent of the workforce will be self-employed, small-business entrepreneurs.

---

5 This description of an SME is adapted from a similar one in Gibb A. A. (1996), *Training for enterprise: the role of education and training in SME development*, a discussion paper written for the Italian Presidency Conference of Ministers from the Member States of the European Union and the Countries of Central and Eastern Europe, Central Asia and Mongolia, Torino, May, 1996.

There are about 16 million small businesses in the EU and, because of the dynamics of the SME sector, it can be predicted that about 10% of them will cease trading each year and will be replaced each year. The proportions of SMEs in the workforces of partner countries are not yet as high but are likely, over time, to converge with those of Member States. These high numbers confirm the duty of those responsible for vocational education and training systems to provide for the SME sector and to see that those who may choose employment or self-employment in small firms are properly educated and prepared for their roles.

However, individual decisions to choose self-employment are rarely predictable. They tend to be more of a response to a sudden, critical event (such as a business opportunity, or being made unemployed) than a career choice. As a result, adapting to SMEs, self-employment and learning entrepreneurship tends to be led by experience. So, vocational education and training providers are denied the luxury of a captive audience of youth groups setting out on a controlled programme of learning and established approaches to vocational education and training provision are thus not necessarily suited to the process of choosing the entrepreneurship option.

Despite developments in vocational education and training system design, there still remains the significant challenge to design a vocational education and training curriculum to meet the training and development needs of the SME sector. Attention can sometimes be diverted from this central issue by concerns about "qualifications". But, if people employ themselves and assess their own abilities, who needs qualifications and when?

In the light of this background, this paper examines the following issues:

1. Routes to self-employment and entrepreneurship, alternative career paths and personal development between education, employment and the self-employment option, implications for access and progression to qualification pathways;
2. Qualification needs and routes to self-employment;
3. Entrepreneurship, the learning process and the implications for education and training strategies;
4. Phases in business and implications for a framework of entrepreneurship competencies and qualifications; and
5. Qualification and assessment, the importance of personal competencies.

## C. Routes to self-employment and entrepreneurship, alternative career paths and personal development between education, employment and the self-employment option

It has not been long since vocational education and training in EU countries was centred on training younger learners in the traditional craft occupations (of construction, manufacturing, communications and other principal industries) and on common technical services for them. The process of economic and technological change, which has gathered momentum since the 1970s, has spurred a much wider range of provision. Programmes are now generally provided for the service industries in both the private and public sectors of employment. Supervisory and management training provision has been expanded as well. Further, in both new and established occupational areas, employers have realised the need to update skills to higher levels to meet the needs of technical advances and for multi-skilled employees to meet the needs of new work practices. During the industrial restructuring of the 1980s and 1990s (in which some industries collapsed and many others "down-sized") the enormous job losses brought many older people back into the vocational education and training system for retraining.

Vocational education and training providers have responded to the changing labour-market conditions by extending vocational education and training progression paths from basic occupational training to higher levels and continuing professional development. At the same time, government training budgets have made provisions for adult learners to have access to new or different vocational education and training progression routes. Nevertheless, job insecurity, redundancies and high levels of unemployment have continued to be a fact of life and seem likely to remain so[6], and many unemployed people have taken up the self-employment option, the larger proportion founding small businesses based on their craft and service skills.

The combined effect of unemployment and new opportunities for entrepreneurs is that more people are coming to the self-employment option via different routes, as shown in Figure 1. Most take the conventional route via vocational education and training to the employment market in search of a job or a career. Some do not succeed and decide instead to create their own jobs by starting small businesses. Others, after some experience, decide to become self-employed. Some independent-minded young people, who become entrepreneurial, may develop the ambition to start their own business and may take the direct route to self-employment without entering the job market at all. At any time in business, an owner-manager can decide to return to the job market.

The training support which has been provided for new business starters and for established entrepreneurs has often been "driven" by the political issues of unemployment[7] or competitiveness within the EU group of countries. There seems to have been only limited debate, if any, on the need for entrepreneurship within the SME sector and for the vocational education and training system to have a wider role in providing more general support for the self-employment route.

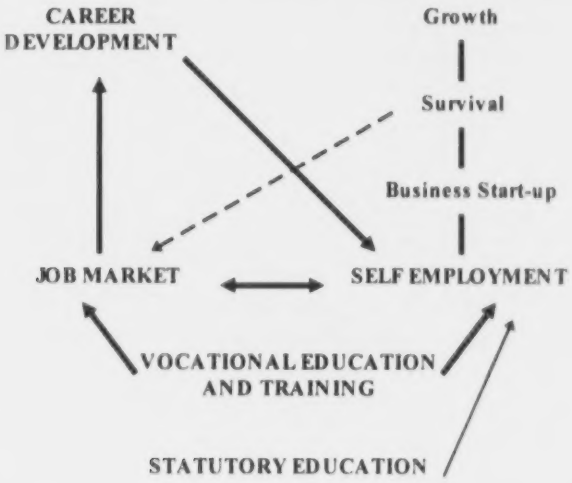
***Figure 1***

---

6 European Commission . *Labour market flexibility: experiences from twelve member states.* In Employment Observatory—Trends. Annual Report 22. pp 5-21. Brussels 1995.

7 European Commission. White Paper. Com. (93) 700. (The Delors report).

*Routes to self-employment and entrepreneurship, alternative career paths and personal development among the education, employment and self-employment options*




Two types of initiative are possible. One is to add an entrepreneurship component to programmes involving indirect routes to self-employment via vocational education and training and the job market, especially for those whose vocational education and training develops marketable skills and services, such as craft skills. The second is to provide an express vocational education and training route based on the understanding that learners may choose self-employment (if they have the idea and the confidence) or go onto the job market as potential employees in SMEs. Both should offer access to a course progression tailored to the phases of business development. As yet, however, it is hard to find an example of either type of initiative in formal vocational education and training systems.

## D. Qualification needs and routes to self-employment

An entrepreneurship qualification system should serve the needs of its market segments. The market includes persons who enter self-employment from the labour market after being made unemployed or who have failed to find employment after completing a different vocational education and training programme. Other persons leave secure employment because they are enthused by a business idea or because they think they can do better relying on their own abilities. If they feel they lack certain vital knowledge, abilities, or skills they are likely to supplement the deficiency by choosing a partner or consultant or by learning as they go, relying on their personal competencies. Academic qualifications may be regarded by such people as an unnecessary distraction rather than as a desirable achievement

Younger entrepreneurs generally have less to lose and do not lack confidence; however, they may be less prepared for self-employment than adult business starters as they have had less experience and fewer opportunities to develop personal competencies. They are thus more likely to benefit more from longer, planned, educational, personal and business development programmes. Their needs may be, ostensibly, to become young entrepreneurs and business starters; but at the end of the programme, if they have not already acted on their business ideas, they still have the option of going to the job market to seek employment in some area of small-business management and development, using the qualification they have gained.

Thus, people following different routes to self-employment have different needs for qualifications and, in some cases, urgency may be a factor. Starting from different points of experience and personal development, the rate at which persons afterwards develop relevant competencies varies with the pace with which they move to start and establish a business. To accommodate their needs, vocational education and training systems need to provide flexible access to entrepreneurial qualifications. A qualification can be seen to be either a barrier or a mark of achievement. For example, it may be used to protect and limit entry to professions, to short-list applicants for jobs, or to determine salaries and eligibility for promotion. Some of these incentives do not apply to self-employment, but one argument for requiring entrepreneurs to be qualified is that creditors and customers can suffer at the hands of incompetent entrepreneurs. This argument would carry more weight if qualifications could be shown to assure (1) competence in entrepreneurship; and (2) fewer disappointed creditors and customers. At least one attempt has been made (in the UK) to persuade bankers to endorse a national vocational qualification for new business starters and to make it a requirement for bank-credit facilities. The failure of this attempt could be interpreted to mean that bankers feel that the competency of entrepreneurs with whom they do business can be better judged by other criteria (such as personal competencies). However, this does not prevent a relevant qualification from being a useful asset in seeking access to financial support from suppliers, banks, investors and partners.

## E. Entrepreneurship, the learning process and the implications for education and training strategies

To assure relevance in vocational education and training, formal education and training must complement the practical experience of learning. The practical way of learning entrepreneurship is by observing and comparing the business behaviour of others (family, acquaintances and role models) and from personal experience (trial and error) in starting and running a business. In this way competency develops and accumulates with experience and, in the case of entrepreneurs, as their businesses develop. To match this process of "learning by doing", curriculum experiences would include:

- generating a business idea and researching its feasibility;
- identifying potential customers and resources;
- developing a personal network of business-related contacts;
- seizing opportunities;
- copying others;
- developing a personal network including suppliers, customers, bankers, accountants, regulatory officers, and others;
- taking decisions;
- possibly making mistakes and recovering from them; and
- anticipating and solving problems.

The entrepreneurial role, especially in smaller businesses, demands total commitment from an entrepreneur. Resources are invariably limited and the entrepreneur may be performing all functions personally. Day-to-day problems often dominate mental concentration and there is little time or inclination for reading and formal learning. When faced with conflicting demands between their own business interests and the norms of vocational education and training institutions and training programmes, the latter may be regarded as irrelevant. These factors, and perhaps personal

characteristics and tendencies too, influence the preferred learning styles of entrepreneurs — the majority of whom seem to tend towards action and pragmatism.

To complement these conditions, entrepreneurship trainers employ training strategies and methods which facilitate the natural processes of experiential learning (learning by "doing"), social learning (using others to learn) and learning to learn. They achieve this by promoting experience-sharing and by encouraging active learning with real business development projects and assignments designed to enhance the performance of entrepreneurs and their businesses. Business outcomes, such as financial performance, growth and job creation, are the learning outcomes measured. The relationship between learner and trainer is treated as a partnership to achieve shared learning objectives.

One of the challenges for vocational education and training systems is to support the SME sector with direct vocational education and training routes to self-employment, and this would require "programme champions" who can successfully apply the approaches and methods of entrepreneurship trainers. A suitable approach would require support for students as they acquire *real* experience and competencies for entrepreneurship; the practice of placing students in SMEs to observe and learn *about* being an entrepreneur would not be sufficient.

## F. Phases in business and implications for a framework of entrepreneurship competencies and qualifications

Vocational education and training qualification systems are normally based on an analysis of competencies within the main functional areas of an occupational role. Standards are then set for the performance of clusters of competencies selected to form the content of a qualification. The learning process is facilitated by training inputs which help learners identify and understand the competencies they are developing. To be relevant to the experience of entrepreneurship, a qualification system needs to reflect the realities of the entrepreneur role.

An analysis of the role of a small business entrepreneur reveals a holistic approach to critical incidents and decision events. The approach combines multi-disciplinary clusters of competencies with external relationship considerations and resource issues in the context of internal operations.

The following example clarifies this point: An entrepreneur receives the news that his largest customer cannot pay a major debt. This throws the business into negative cashflow and difficulty with creditors. This situation has both short-term and long-term operational and strategic implications; it involves customer relations, debt-control systems, relations with suppliers and banks, work in progress, current commitments to customers and staff, sales plans and targets, a review of the structure of the current customer base and future marketing strategies. All of these issues will be dealt with by the entrepreneur, largely on the basis of relationships with his/her personal network, customer group and the intimate knowledge of his/her own business affairs.

Incidents and types of decisions can be associated with phases in business — start-up, survival, growth and internationalisation. Associated with each phase is a different cluster of objectives, problems and competencies. These provide a basis for a syllabus and a qualification framework, as shown in Table 1, realistically attuned to learning needs.

***Table 1***

***Example of a syllabus for entrepreneurship based on phases in business***

| Phase of Business development | Clusters of competency areas and learning needs |
|---|---|
| **Start-up**<br>Essential entrepreneurial activity: identify business opportunity, calculate risk, obtain and allocate resources for profit | How to generate a business idea<br>How to research ideas and establish feasibility<br>How to formulate a business strategy and plan a start-up project<br>How to negotiate resource requirements<br>How to implement a start-up plan<br>How to bridge skills gaps rapidly |
| **Consolidation and Survival**<br>Essential entrepreneurial activity: review existing position, refine management systems and resource allocation, improve business performance | How to obtain information for business decisions<br>How to review and refine the customer base<br>How to review and refine personal networks and relationships<br>How to review and refine business control systems<br>How to review and refine processes, procedures and resources for business transactions<br>How to manage critical incidents and problem situations<br>How to manage margins |
| **Growth**<br>Essential entrepreneurial activity: identify new markets and opportunities, calculate risk, obtain and allocate new resources, manage change | How to identify and review growth opportunities<br>How to determine objectives and formulate strategy<br>How to establish feasibility<br>How to review current capacities, capabilities, systems and resources<br>How to plan a growth project<br>How to resource a growth project<br>How to establish a management team<br>How to implement a plan |

## G. "Qualification" and assessment: the importance of personal competencies

Vocational education and training system designers have learned to define performance criteria for functional competencies and to use them in assessment procedures. To assess performance at higher levels of competency, such as entrepreneurship, diverse forms of documentary evidence and witness statements, collected in the course of completing real-business development projects and assignments, are admitted into the assessment process. Despite being generally crucial to the effective performance of functions, however, personal competencies are not yet systematically defined and assessed. This undermines the value of qualifications.

One analysis[8] has identified several clusters of personal competencies at the core of entrepreneurship, examples of which are shown in Table 2 below. Indeed, the authors believe that these competencies are equally or more important than functional ones. They believe that "qualifications" are misleading when they are awarded on the basis of functional competencies alone.

*Table 2*

*Examples of clusters of personal competencies at the core of entrepreneurship*

| Core competence area | Competence cluster includes |
|---|---|
| 1. PROBLEM SOLVING | 1. Analysis, Creativity, Intuition, Judgement |
| 2. LEARNING | 2. Perception, Cognition, Self-Assessment |
| 3. COMMUNICATION | 3. Presentation, Language, Listening |
| 4. WORKING WITH OTHERS | 4. Negotiation, Persuasion, Leadership |
| 5. NUMERACY | 5. Estimation, Calculation Interpretation |
| 6. INFORMATION PROCESSING | 6. Data collection, Organisation, Presentation |
| 7. TAKING GOAL-RELATED ACTION | 7. Risk assessment, Planning, Taking and implementing decisions |
| 8. ETHICAL COMPETENCE | 8. Maintaining personal integrity, Respecting contractual obligations |

In one focus group[9], the participants, who were trainers and teachers from different EU and partner counties listed "problem solving" and "taking action" as the two, most important core competencies. How can teachers and trainers contribute to the learning process for these essentially experientially learned competencies? Learning and self-assessment ability must also be ranked as crucial competencies. After all, who must decide when a person is ready to start a business, who must have the self-confidence to survive, who must judge the risk? Who must judge whether a person is competent to learn in business situations as they develop? That person himself

---

8 Adapted from Gibb Y. K. and Nelson E. G. *Personal competences, training and assessment: a challenge for small business trainers*. European Foundation for Management Development, Vaasa 1996.

9 Focus group on the assessment of personal competences in entrepreneurship at the small business conference of the European Foundation for Management Development. Vaasa 1996.

or herself, of course. And tutors are challenged to make "learning to learn" and self-assessment central aims in an entrepreneurship development programme.

## H. Conclusion

After examining the issue of vocational education and training provision for the SME sector, three areas of need associated with the qualification of entrepreneurs emerge: (1) a vocational education and training career path for potential and existing entrepreneurs; (2) the recognition of personal competencies as the key to effective entrepreneurship; and (3) a qualification system compatible with self-employment and the process of learning entrepreneurship.

Although there has been a good deal of programme and curriculum development to assist unemployed persons and those who decide to leave their jobs to pursue personal business interests, what has often been provided has been of a "fire-fighting" nature, designed more to accommodate political issues than to support the SME sector. Such provision has sometimes been short and temporary. It is difficult to find examples of routes through vocational education and training having become *established* to develop and qualify individuals for a career in self-employment and entrepreneurship. This is a significant gap in vocational education and training support for the SME sector. The decision to pursue such a career may be taken at any time between statutory education and retirement and therefore entry and progression opportunities should be available for both young and adult learners. Experiential learning is the normal process of learning entrepreneurship and is most effectively supported by a competency-based curriculum. Self-employment carries with it almost complete autonomy, which is the highest level of competency, and therefore cannot be said to offer levels for progressive qualification. Business development, however, is itself a progressive process, phases of which would offer a method of accumulating experience and qualifications in business start-up, consolidation and survival, growth, and internationalisation of business activities.

In entrepreneurship, personal competencies are essential for the effective performance of higher level functional competencies and they are recognised in vocational education and training systems[10]; however, since they are considered to be implicit in the effective performance of functional competencies, they are not assessed *per se* in qualification systems. This leaves entrepreneurship training deficient in essential learning objectives and leaves learners deficient in feedback on developing essential, core competencies. Specialists in competency-based education and training have proposed practical methods for defining personal competencies and criteria for their assessment. It remains for innovative practitioners to design personal competencies into entrepreneurship development and qualification systems.

When the challenge to establish career support for potential entrepreneurs is formally initiated, one of the first steps is to find a "programme champion" who empathises with the psyche of small-business entrepreneurs and who understands the role of qualifications in entrepreneurship development programmes and experiential learning processes. Relevant questions for designing a qualifications programme are: What purpose do qualifications serve?" and "For whom are they?" If there is no employer to be satisfied, it is easier to think innovatively about the flexibility and content of the qualification system and how it can be made compatible with the experiential learning process.

---

10 See for example the competency frameworks of the Management Charter Initiative and of the Small Firms Lead Body, the Industry Lead Bodies for management and self-employment occupations recognised by the National Council for Vocational Qualifications in England and Wales.

As a minimum requirement, a qualification system should motivate a learner to self-assess his/her own competencies, learning needs and learning abilities and "take ownership" of a personal development programme. Because of the experiential nature of the entrepreneurship learning process, a qualification system should be developed on the basis of projects designed and undertaken to meet real business problems and development needs. Contexts and problems to which competencies are applied may be regarded as being relevant to a qualification, for example, "This candidate has completed a project to enable a business to recover from the loss of a major customer who normally took 35% of the business' product. During the project the candidate developed and applied the following personal and functional competencies...."

Freedom from the constraint to satisfy the needs of an employer makes it possible to be creative and innovative when approaching the design and delivery of vocational education and training provision and qualification systems. When revamping their programmes to incorporate training for entrepreneurship, institutions and staffs would need to make some psychological adjustments to the types of learning processes they would use and the learning outcomes expected. There would also need to be clear lines drawn regarding the roles and responsibilities of staff with regard to the business decisions and risks undertaken by entrepreneurs when they are involved in entrepreneurial training programmes. This, too, is more of a psychological barrier than a practical one because there are many precedents and examples of courses which facilitated live business start-up, survival and growth.

### *Questions for Consideration*

The debate about entrepreneurship has not yet been seriously opened in policy circles. When it is, the following questions might be used to generate ideas:

1. Who are the stakeholders in vocational education, training and qualifications for entrepreneurship in the SME sector and what arguments can be used to persuade them to establish a career path and qualifications for young entrepreneurs?
2. A vocational education and training route to entrepreneurship should provide considerable scope for teachers and trainers to develop innovative curricula, materials and methods. How should this best be disseminated, promoted and embedded in programmes in a consistent way?
3. What are the opportunities for introducing curricula for entrepreneurship training, development and qualifications into other vocational education and training programmes? What benefits are to be aimed for? What barriers are anticipated and how should they be overcome?

# AGAINST OVER-SPECIALISATION AND IN FAVOUR OF FLEXIBILITY: THE "CORRECT" DESIGN OF OCCUPATIONAL PROFILES

**Marian Piotrowski and Henryk Bednarczyk**
**Instytut Technologii Eksploatacji, Poland**

Vocational education is of great importance to the entire Polish educational system because, in Poland, there are 9655 vocational schools which educate more than 1,800,000 (one million eight-hundred thousand) pupils per year. This means that approximately 68 percent of all pupils leaving primary school move on to be educated in vocational schools (Grabowska, 1996). Thus, over two-thirds of all the young people in Poland are undergoing an educational process which is responsible for providing their generation with vocational career opportunities.

The trend toward post-education vocational mobility has led to the development of a basic, broad-profile, vocational education system. However, employers expect competence and mastery in the execution of processes, production and service operations. Thus, educational curricula must include didactic classes which enable pupils to: (1) do practical work; (2) practice exercises; (3) master procedures; and (4) use team work methods. Further, traditional vocational education and training practices, which support regular increases in the education level, are in apparent conflict with the needs of designers for workers (with minimum qualifications) who simply and competently attend machines, equipment and apparatus. Several basic defects in Poland's current vocational education model have been identified as follows:

- lack of vocational mobility;
- little (or superficial) acquaintance with modern technology;
- insufficient mastery of fundamental practical skills;
- lack of basic legal, economic and financial knowledge;
- lack of skill in using information sources (computer, foreign
- languages); and
- lack of preparation for competing actively on the labour market.

Increasingly, the knowledge and skills traditionally included in the general culture of students also become elements of vocational education, which are manifest in activities in the international arena. As a result of discussions between representatives of the European Trade Union Club (ETUC) and the European Employers' Federation (UNICE) about the skills and competencies required of vocational education graduates (Bogaj, 1994), the following were chosen :

- communication;
- searching for and processing information;
- readiness to accept change in workplace surroundings and the necessary skills to adapt — in particular, adaptation to changes and applications concerning new technology;
- independent, decision-making skills;

- skills involving the use of one's rights and duties as a citizen and
- consumer;
- self-education and self-development skills;
- skills involving communication in different languages;
- initiative, responsiveness, resourcefulness, creativity, responsibility, critical ability, and independence in work and work-related activities; and
- sense of European citizenship and European "thinking".

## A. The general direction of change in the content of the new curriculum

The following seven points reflect the general tendency toward change in the content and specifications of Poland's new curricula. The extrapolation was based on current trends in global, scientific-technical progress:

1. Automation connected to further mechanisation of production processes;
2. Use of microelectronics, robots as well as electronic-control and regulation techniques;
3. Techniques for information processing based on microelectronics;
4. Development and complete use of the power and raw-material base for enhancing existing materials and creating new ones;
5. Machine, equipment, apparatus upkeep and repair;
6. Developing the services needed from expansion in the number of final goods and products; and
7. Preserving the environment nature, resources and energy.

## B. The current state of vocational education in Poland

The main types of vocational schools in Poland are as follows:

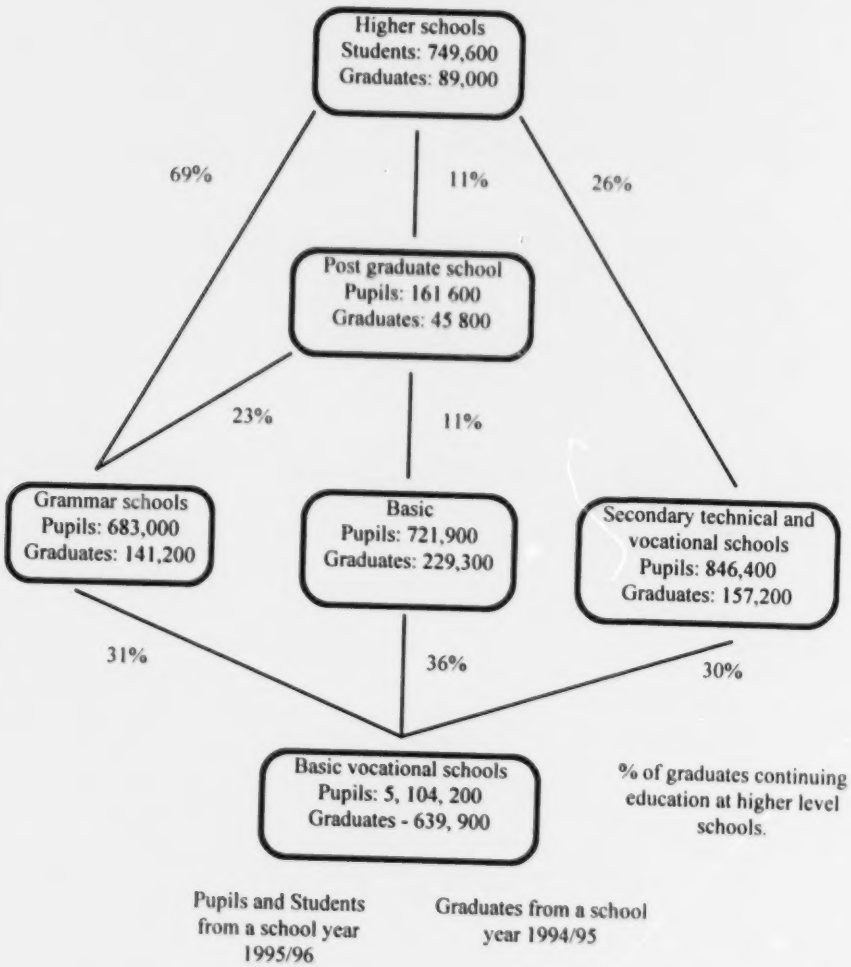
- basic vocational schools;
- secondary vocational schools (technical schools, Polish secondary vocational schools, Polish technical secondary schools);
- post-secondary schools;
- higher schools (colleges, higher vocational schools, universities, polytechnics, academies) with two levels of vocational education:
  - Level #1: licentiate: engineer,
  - Level #2: master: master engineer.

There are three main laws which govern education in Poland: (1) *the educational system law* by which basic vocational school activities are governed; (2) *the higher education law* which defines the content of higher education; and (3) *the law governing university degrees* and titles which specifies higher school degree requirements. In recent years the number of students has considerably increased.

For almost the last 5 years the number of first-year students has been increasing due to the demographic explosion and the increased proportion of secondary-school leavers who tend to continue their education in higher -level schools. This situation is presented in Figure 1. Almost 26% of the total number of vocational-school leavers and 64% of all Polish grammar school leavers continue their education at higher-school levels. (Glowny Urzad Statystyczny, 1996)

***Figure 1***

***Flow of young people through a Polish school system from school year 1995/96; Graduates from school year 1994/95***



The high rate of unemployment among basic vocational school alumnae galvanised criticism of the vocational educational system which activated a number of changes.

## C. Broad-profile education or occupational mastery?

Concern for the lack of mobility and flexibility in vocational education is noticeable in the systematic *decrease in the number of occupations listed in the classification of vocational education occupations.* In 1982 there were 527 listings; in 1986 there were 241; and in 1993 there were 138. In 1993, however, a new form of education—the Polish technical secondary school—was proposed. Then, in 1995 an experiment using modular curricula for technical secondary schools was carried out in 136 schools (Bialecki, 1995). Despite enormous difficulties, teams managed by Dr. J. Moos quickly worked out new specifications and prepared the teachers and the schools for this huge and necessary experiment. This technical secondary school educates students in the following twelve profiles (Moos, 1996):

1. administration/finance;
2. social services;
3. financial services;
4. environmental protection;
5. mechanics;
6. electronics/energy;
7. chemical electronics;
8. agriculture/catering;
9. wood and forestry technology;
10. textiles;
11. communications; and
12. transport.

Formally, the technical secondary school will provide a general, secondary-education curriculum and students will receive a secondary-school certificate in which a vocational profile is defined. However, qualifying titles will not be conferred.

At the same time, a new classification of occupations and specialities according to international standards ISCO-88 was completed in which twenty-seven (27) big, ten (10) medium and 396 small groups (containing 2388 occupations and specialities) were proposed. (Butkiewicz, 1995). As a result the increase in the number of pupils educated at the secondary level and the decrease in the number of pupils educated in vocational schools is being combined with additional training and the development of extra-school education and enterprises.

A question arises. "Are the small, weak private companies (which usually offer short-term employment and close-to minimal salaries) interested in vocational development? The trend towards broad-profile education is confronted in practice with the need to develop specific skills and ensure mastery of operations, processes, or sets of activities described by quality-system procedures. The poorly-funded schools and workshops and the fact that most enterprises are indisposed to do practical, occupational training are two main reasons why pupils are not well prepared for the world of work. Another question arises. "Will regional practical education centres be able to cope with this task?"

## D. Practical education centres

Practical education centres, another new concept in Poland, have been designed to provide practical education for young and adult people and to develop vocational subject-matter teachers. The tasks performed by these centres follow. The centres provide:

- courses for pupils in practical occupations (in basic vocational schools, secondary vocational and post-secondary schools) across the gamut of the curriculum, including modern techniques and production technologies;
- opportunities for vocational subject-matter teachers to specialise in new areas and develop additional education;
- classes which prepare pupils for work;
- examinations in practical knowledge of work and vocational preparation for vocational school pupils;
- qualifying examinations for participants in extra-school forms of education; and
- courses which raise qualifications or which enable adults to qualify for new jobs through self-directed learning programmes.

## E. Quality and technology of education

In an economy which is adapting to the open market and complete integration, the attempt to work out and implement quality assurance systems using European standard ISO 9000 is widespread. These quality assurance systems require a *Quality Manual* to be used as a basic document. Employees must be able to complete detailed procedures and instructions. Moreover, alumnae and the unemployed must be able to cope with these requirements.

Furthermore, in world practice, systems of educational quality assurance, accreditation and certification are used in vocational education at all levels. Specific procedures and vocational education standards are instruments of quality measurement. One often-used requirement is to separate the following institutional components: education, training, examinations, assessment, and recognition of skills and qualifications. An important element is certification: certificates define or confirm what and to what extent an alumnus has gained theoretical and practical skills. The criteria for assessing the quality of the educational process and the level of the skills gained must be taken into consideration because these criteria define vocational education standards.

The assurance of vocational education standards — according to the occupational specifications ratified at the State level — must be provided by educational institutions. Those institutions should now have the right to provide vocational education through licensing and, in the future, after

assessment, the awarding of a special certificate. This requires creating consultative units to monitor and check up on vocational education standards. Identical vocational education examination requirements should be obligatory throughout the entire country.

In 1993 an educational cooperation project between three Radom vocational schools and two colleges from Great Britain (Sheffield College and Barnsley College) began. The following Radom schools were involved: The Construction School Complex, The Catering School Complex, and The Motor Vehicle School Complex. Cooperation involved implementing the British vocational education system and a detailed, complete monitoring and confirmation system for ensuring the achievement of vocational competency of students in these Polish vocational schools. These competencies are included in the Polish system of National Vocational Qualifications (Piotrowski, 1995, 232).

## F. A modular structure of educational content

The latest trend in designing curricula in Poland involves a modular structure of educational content. Using this structure it is possible to exchange some modules as responses to practical needs and to changes in educational circumstances. It is not possible to implement modular education quickly because modularization requires high development costs for: (1) training vocational subject-matter teachers; (2) creating new handbooks; and (3) designing and producing educational packages.

In Poland, at present, both traditional curriculum specifications and modular curricula have been worked out within the framework of the Phare Programme (Poland and Hungary Assistance for Restructuring the Economy).

From 1988 to 1992 at the Staff Education and Development Centre in the Institute for Terotechnology in Radom, four "Curriculum Commissions of Specialised Vocational Subjects" from the Ministry of Industry and Commerce carried out work in the following branches of industry: machine, electric, electronic and leather. Ninety-two (92) curriculum specifications were prepared (Bednarczyk, 1996).

Further, within the framework of the Phare UPET Programme (Upgrading Education and Training in Poland) and with the participation of experts from FAS International Consulting Limited from Ireland, modular curricula for the following two occupations were worked out: (1) mechanic: machine and equipment fitter; and (2) mechanic-technician. The modular curriculum for the "Mechanic: machine and equipment fitter" is being used in six (6) schools and that for the "Mechanic: technician" in twelve (12) schools (Bednarczyk, 1996).

Modules were also developed and used within the framework of the TESSA Programme ("Training and Education in Strategically Significant Areas"). Modular curriculum specifications at the post-secondary level "Economics and organisation of enterprises of transport" and "Use of hardware in management, administration and enterprise attendance" were developed. All graduates who complete all modules receive the title of *"Mechanic-technician"* (Bednarczyk, 1996).

## G. Scientific-methodical support for vocational education development

At present, in Poland, research work is being carried out by the following institutions:

- The Institute of Scientific Research in Warsaw;
- The Department of Labour Pedagogy at The Higher Pedagogic School in Bydgoszcz;
- The Main Teachers Development Centre in Warsaw; and
- The Staff Education and Development Centre of Institute for Terotechnology in Radom.

From experience in cooperating with the vocational education system, it is clear that research programmes should take the following issues into consideration:

- theoretical bases of vocational education and development;
- analysis of the labour market and the demand for vocational qualifications;
- vocational-education objectives;
- the open, flexible system of modular education;
- models of occupations and specialities;
- the technology of vocational education;
- quality, standards and instruments of measurement;
- the theoretical and methodological bases of multi-media handbooks;
- the attitude, motivation of pupils and graduates;
- education and development of vocational subject-matter teachers;
- practical teaching of the occupation;
- vocational-pedagogic information; and
- vocational adaptation of vocational schools graduates.

## H. Directions of vocational education reform: a summary

The principles of industrial politics and the experience of other countries point out that, as the prospective directions of employment increase, so also will education. Education will expand its:

- sphere of services;
- capability to gather, process and exchange information;
- preservation of nature;
- effective maintenance of real estate; and
- new technology.

## I. In conclusion: a forecast for Poland

In Poland, it is forecast that economic activities and employment in the mining industry will decrease, mostly in: (1) pit-coal mining; (2) metallurgy; (3) companies whose processes harm the environment; and (4) energy-absorbing companies. Moreover, the decrease in employment will be caused by processes adjusting to the open international market, especially in agriculture. Based on these future trends then, vocational education should be reformed and the structure and forms of education should be modified — simultaneously — as follows:

1. The structure and direction of education must be (1) adapted to current and forecast labour-market needs (not only one educational direction at school); and (2) modernised in terms of its educational form and methodology (from subject form to flexible, modular);
2. The development of broad-profile education must be linked to students' gaining actual, practical skills connected with the job; they must also learn the skills necessary for them to compete effectively on the labour market; they must learn the essential element of initiative; and they must be prepared for continuing education within the context of competition; and
3. Forms of extra-school education must be developed in combination with in-school education to make one, permeable, flexible system, in which the implementation of internal and external educational quality assurance systems and vocational qualification standards (equivalent to standards in the EU countries) are established.

## References


1. H. Bednarczyk: *Zadania i kszta'cenie zawodowe mechaników*. Programy i ramowe plany nauczania w zasadniczych i œrednich szko³ach zawodowych. Radom 1996.
2. I. **Bialecki:** *Edukacja w zmieniajacym sic spolcczeñstwie*. Zawody i specjalnoœci. 1995.
3. A. Bogaj: *Relacje miêdzy ksztalceniem ogólnym i zawodowym*. W: Kwiatkowski, Stefan M., Ksztalcenie zawodowe w warunkach gospodarki rynkowej. Warszawa 1994.
4. M. Butkiewicz: *Model polskich standardów kwalifikacji zawodowych*. Struktura modelu polskich standardów kwalifikacji zawodowych. Radom 1995.
5. Glowny, Urzad Statystyczny: *Oswiata I wychowanie w roku szkolnym w 1996/95*. p 10. Warszawa. 1995.
6. J. Gorgoñ, H. M'kosa, M. Piotrowski: *Pedagogika Pracy 26/27*. Uwarunkowania uzyskiwania brytyjskich standardów NVQ w polskich szko³ach zawodowych. Radom 1995.
7. D. Grabowska, W. Przedmowa and J. Moos. Liceum techniczne. Radom 1996.
8. J. Moos: Zalozenia Programowo-Organizacyjne. Liceum techniczne. Radom 1996.

# THE ROLE OF SOCIAL PARTNERS IN CURRICULUM INNOVATION

**Haralabos Fragoulis**
**European Training Foundation**

## A. Introduction

The aim of this paper is to stimulate discussion in the partner countries about the role social partners[11] can play in encouraging cross-fertilisation between the educational system and the world of work. The paper has two parts: (1) a brief overview of the state of the art in Central and Eastern Europe; and (2) highlights of the European Union experience.

The overview briefly describes the current situation of social partnership in the countries of Central and Eastern Europe (CEEC) as well as specific developments and challenges involving social-partner participation in the vocational education and training system reform processes in those countries. The overview is based on the main findings and conclusions of the European Training Foundation's 1996 Advisory Forum Sub-group B Meeting. A brief summary of the report synthesising the discussions of this meeting has been included as an annex to this paper.

The second part of the paper highlights some recent EU experiences which demonstrate interesting, pro-active and innovative approaches to vocational training developed by social partners.

## B. Overview of the situation regarding the development of social dialogue in Central and Eastern Europe

The point of departure for social partnership in the partner countries differs radically from that the European Union. Social dialogue[12] is at the centre of the European social model and is a consolidated, although diversified, reality throughout the Union. On the other hand, developing an appropriate social-dialogue system is one of the major policy goals of most partner countries (in particular those of Central Europe).

---

11 The term "social partners" has a specific meaning here which may best be described as follows: national or international organisations representing the fundamental interests of labour and management (workers and employers)

12 "Social dialogue" is defined here as the whole range of communication practices, mechanisms and arrangements between social partners aiming to deal with issues/problems related to their interests. These practices, arrangements and mechanisms can be informal and voluntary, formal and compulsory, contentious or consensual.

However, the development of social-dialogue practices in the partner countries often has to take place in unfavourable contexts (economic crisis, urgent reform, constant structural transformations, weak private-sector development) and hence the relative absence of strong employer representation. The very existence and representativeness of social partners poses a problem in the current transition phase towards a market economy. When social partners do exist, their autonomy vis-à-vis the State is not always guaranteed. Their ability to deal with the issues relating to vocational training cannot always be taken for granted and presupposes a technical and specific culture, while other issues deemed more urgent are on the agenda (jobs, purchasing power, welfare protection). The technical co-operation programmes relating to training have not always given social dialogue the importance its strategic significance warrants.

Under these conditions, vocational training seems to be a low-ranking priority for social-partner dialogue compared to other topics such as wage determination and working conditions.

Where it does occur, however, social dialogue on vocational education and training issues is a diverse and rather limited phenomenon which reflects the countries' various socio-economic, political and cultural background and traditions.

Nevertheless, in these countries there is a noticeable, common trend — a clear preference for establishing tripartite structures at the national level to deal with a number of issues — including vocational education and training. This trend reflects the prevailing influence of the State institutions and structures in the economic sphere. In some cases, specific vocational- education-and-training-related tripartite bodies have been created at the national level. These tripartite structures are of a predominant consultative nature. The vocational education and training related social dialogue seems to focus on the following key issues: (1) the establishment of legal and financial arrangements; and (2) the identification of priority training areas and needs. The development of forms of social dialogue is still very weak and exceptional at decentralised levels such as the sectoral level and the company level.

Vocational education and training constitutes a most appropriate area (with respect to such "contentious" topics as wages) for which consensus approaches may be developed. However, this presupposes the development of respective skills and the specific culture of social dialogue (in both social-partner organisations and public administration) which is often missing in partner countries.

Although the urgency of vocational education and training system reform does not provide the most suitable framework for developing a set of social dialogue procedures (which, in most cases, is a long, time-consuming exercise) the major positive side of social dialogue should not be ignored by the partner countries. Indeed, the involvement of social partners may guarantee efficiency and sustainability of the reforms.

## C. The role of social partners in the development of innovative approaches to vocational training: the EU experience and practice

Increased awareness of the important links between vocational training, employment and competitiveness have led to significant social dialogue about these issues throughout the EU Member States. A comparative examination of the specific field of vocational training points out the priority areas of common interest for social partner discussion at the national level as:

- establishing a financial and institutional framework for continuing training;
- promoting access to training; and
- recognising and validating training in the workplace.

Education and training is also one of the main areas in which the European social partners have had intense exchanges and discussions which have resulted in a number of "Joint Opinions" over the last ten years. Aside from the issues mentioned above (which are at the centre of the social dialogue taking place in the various Member States) these "Joint Opinions" reflect particular attention being paid to specific target groups (such as women and the unemployed) and to themes (such as (1) the role of training in the transition from school to work; and (2) the future actions of the EU in the field of vocational training).

In addition to the above developments, one can identify some interesting trends in which social partners take on (autonomously or in cooperation with the public authorities of the Member States) additional responsibilities and/or endeavour to define new approaches to vocational training. The following paragraphs illustrate such trends.

### *1. Social partners and the identification of skill needs*

The experience of several EU countries shows the active involvement of social partners in identifying skill needs:

- in Austria, future skill and training needs are identified on the basis of studies carried out at the initiative of the social partners within the framework of the national Advisory Council on Economic and Social Affairs;
- in France, studies of skill needs are undertaken in sectors identified in consultation with social partners;
- in the Netherlands, sectoral social partners are involved in updating the national vocational qualification structure to adapt to qualitative changes in skill needs;
- in Denmark, trade and branch committees (where there is social-partner participation) study training needs through qualification analysis and close contact with companies.

## 2. *Social partners and quality assurance*

Most EU countries agree that ensuring quality of training is a matter of great importance for the future. In this respect, in some Member States, social partners have started to be involved in preparing and implementing policies geared towards ensuring: (1) training quality; and (2) training provision relevance to labour-market requirements:

- in Spain, within the framework of the National Tripartite Agreement on Continuing Vocational Training, a company's training scheme is assessed according to criteria including quality, technical specifications and teaching specifications;
- in Denmark, in the framework of professional committees, both parties are jointly responsible for establishing the aim and the scope of the training schemes in the field of continuing training, the number of participants, the teacher qualifications, the training facilities as well as the tests and examinations;
- in Greece, social partners participate in managing a national centre which aims to set up minimum quality standards for training providers.

## 3. *Social partners acting as training providers*

Social-partner organisations develop their own training programmes for their members in Germany, Italy, Belgium, Denmark and Portugal—and these are only some examples.

## 4. *Social partners and the promotion of international partnerships*

The experience gained over recent years within the context of European Union programmes (such as FORCE, PETRA, and LEONARDO) has shown increased participation of social partners in designing and implementing transnational projects. The results of a number of surveys on this participation highlight the following:

- social partners play a key role in creating a "European" training and qualifications dimension;
- social partners contribute to taking into account the vital interests of enterprise and employee training;
- social-partner projects contribute towards improving the quality and performance of vocational training systems in the Member States; and
- finally, within the scope of national industrial relations systems, social partner projects help reinforce and enrich negotiation and social dialogue about training.

## D. Summary of Conclusions and Recommendations of the Advisory Forum Sub-Group B Meeting

***The role of the social partners in the development of training in market economy***

The work carried out by the Sub-group at the seminar, held in Budapest from 23 to 25 February, 1996, showed both the relevance of this choice and the extent of the work to be accomplished in order to create the conditions for the effective involvement of social partners in the strategic fields of vocational education and training.

The exchange at the Budapest seminar made it possible to identify the guiding principles of the action to be undertaken in this field.

1. The social partners in the partner countries are in search of identity and representativity. They are coming to grips with negotiation in a pluralist society. Vocational education and training is but one field of action among many, and it is not always a priority. What is more, other actors can legitimately intervene in this field: the State, parents, student associations, training suppliers, the management of a company. The action of the European Training Foundation must therefore be guided by wisdom and modesty, as, if training finds a more and more significant place in the system of industrial relations, in particular through unemployment prevention strategies, social dialogue on the subject of training is not the only issue of social dialogue. It is the result of the evolutions that have come about outside its specific area. The European Training Foundation should therefore observe the changes which mark a step forward in the social dialogue and in general in the partner countries to facilitate their extension to the specific area of vocational education and training.

2. Recognition, albeit solemn, of a generic competency on the part of the social partners to intervene through Social dialogue in the field of vocational education and training is not enough. This competency must be embedded into the legal systems of the partner countries (Employment Act, law governing vocational training, law on funding systems...). Defining a legal framework for the action of the social partners will contribute to making it possible and efficient. It will make cooperation easier between the Education Ministry and the Labour Ministry.

3. All the partner countries do not offer equally favourable conditions for starting wilful social dialogue actions on the subject of vocational education and training. The history, size and social and economic fabric of the countries must be taken into consideration. The European Training Foundation plan of action will also have to take these elements into account (Phare countries and Tacis countries).

4. Observation of the evolutions which the partner countries are going through in this area is indispensable, as reforms follow reforms with such speed that change itself becomes the only certainty. However, this observation must be oriented towards action, which itself must be pragmatic. New initiatives must be registered as they emerge, they must be rendered in their context and developed, and knowledge of them must be disseminated.

# THE INTEGRATION OF RESEARCH AND DEVELOPMENT IN CURRICULUM INNOVATION

**Pavel Petrovic**
**Research Institute of Technical and Vocational Education, Czech Republic**

## A. Introduction

To begin this discussion on curriculum innovation, it must first be understood that, here, included in the term "curriculum", is all of the experience acquired by pupils in the course of their education. The curriculum is the vehicle through which: (1) a pupil's personality is cultivated; (2) pupils are prepared for personal and civil life; and (3) they are prepared to perform in their future professions. The curriculum is a series of educational events selected from the culture and social experience of the society which runs the schools as educational institutions.

The true shape of a curriculum is determined by the aspirations, qualities, knowledge and skills of those involved in the educational process—particularly pupils and teachers. It is influenced significantly by the nature and quality of the environment, the overall school climate, the relationships among the people involved and by their relationship to their surroundings. The curriculum is supported by textbooks, visual aids and other materials; it is managed and guided by a system of curricular projects, guidelines and regulations which define the goals, the content, the assessment processes and the way school life is organised through instruction. These projects are established at the central (State), regional, local, school, classroom and individual-pupil level. The curriculum is controlled by various bodies through an assessment, examination and monitoring system.

A general curriculum framework may be defined by answering the following questions:

- WHY educate?
- WHO is to be educated? By WHOM?
- WHAT is to be taught?
- WHEN will the education take place?
- HOW to educate?
- Under what CONDITIONS will the education take place? and
- What expected EFFECTS will this education have?

Answers to these questions are related to educational planning, implementation and assessment processes and require practical solutions at the level of the State, the classroom and the individual pupil.

## B. Why educate? The starting points for developing curriculum

A basic characteristic of the new curriculum concept is its programme (or project) structure. This differs substantially from previous pedagogical approaches. A curriculum must capture a complex set of pedagogical phenomena and processes, including: (1) activities of both teachers and pupils; (2) the education input and output levels; and (3) the conditions under which the educational process is to proceed. A curriculum encompasses a complex set of pedagogical stimuli and its components. The entire life of the school and pupil is focused on expressing the quality of change — in the pupil's knowledge and personality — resulting from the educational process. Thus, the goals of education may be thought of as those key pedagogical ideas which have perspective, dynamism and direction. Indeed, educational goals are directed at: (1) shaping the pupil's personal identity *vis-à-vis* cultural, social and moral values; (2) increasing the pupil's social maturity and competence; and (3) providing him/her with a relevant, core subject matter, knowledge base. This wide range of educational, formative goals must be incorporated into and reflected in several successive and interlinked steps within the educational system curriculum, as follows:

- Step #1: basic educational ideas are formed and oriented;
- Step #2: these ideas are projected onto specific values in the various educational areas; and
- Step #3: these ideas are linked to subject-matter and thematic-unit goals.

An important way to implement this new didactic educational concept is to integrate it into the subject matter, across topics, through interdisciplinary and inter-subject studies. When considering new educational forms and programmes, the approach may be based on some trends which are generally respected by most educational systems throughout the world. In particular, this applies to the following starting points:

1. Vocational education and training is not a single intervention, it is an ongoing process. The State educational system is confronted continuously with market-economy requirements, regional needs, the choices open to schools and the pupils' interests and potential. These needs, requirements and limitations affect both the structure and content of the educational system.
2. Because the Central level forms only the functional, methodological, didactic, content framework, the educational system components can support flexibility at other levels. Further, because the guaranteed target structures (expressed in *standards*) remain constant, developing a single-system form of education (which is isolated from its surroundings) can be avoided.
3. Secondary vocational education must now correspond even more to the differentiated structure of the labour market. Today, strictly isolated vocational and technical schools are no longer suitable and the small differentiation between levels of education is also insufficient.

4. The labour-market structure is changing at an increasing speed and vocational education and training must respond flexibly to market developments. It is therefore desirable to outline fields of study which can be combined in a variety of educational paths. This also creates a more articulated vocational education and training system.

5. The professional development of secondary school-leavers is increasingly characterised by transformation and change. Professions are performed differently today. Apart from professional skills and knowledge, the output requirements of vocational education and training must focus on a broad spectrum of professions and place more emphasis on approaches directed towards high mobility, flexibility and adaptability.

6. Because the process of developing a qualified labour force differs in different regions, the number and structure of programmes for school-leavers should be sufficiently differentiated as well. This may be achieved by transferring more decision-making power — concerning the structure, content, goals, fields of study and the number of pupils — to the regions and to the schools themselves.

7. It is of increasing importance for secondary vocational education schools to establish and maintain close cooperation with institutions better able than they to predict the demands of the labour market. These institutions, called "social partners", comprise representatives of businesses, employers' associations, professional associations, chambers of commerce and a variety of other entrepreneurial associations.

A decisive prerequisite for modelling post-primary curricular structures would be to accept the starting-point positions presented above. This requires accepting all recommended forms of vocational education as part of a single, highly differentiated educational system. The main target structures at the various levels of education determine the internal differentiation of the system. The various levels must be interlinked and articulated. The duration of the various forms of education will thus depend entirely on educational goals and the level of education required of the learner upon entrance and exit. Given these assumptions (and defining "target structure" as a cluster of both skills and personal competencies) then, the following three hypotheses on the system structure may be accepted:

1. One target structure may be reached through a number of different educational paths;

2. Several target structures may be defined at one educational level within a limited time frame; and

3. The end of one educational path is the beginning of other paths which offer several, varied possibilities for professional fulfilment and/or further education.

Educational paths, when designed as sequences of interlinked, adapted educational levels, may have a different purpose, shape and duration at each level. At the same time, it is necessary to design each educational path so that the pupil's knowledge potential is assured. The design also should ensure vertical articulation at each, higher level of education. In no case should this system lead to blind alleys ending in impervious boundaries.

## C. Framework targets of curricular policy

In the Czech Republic the results obtained so far in research, diverse analyses and teacher-team discussions clearly point to the need for a deeper conceptual transformation of the entire educational system. To this end, the following seem to be the most important priorities:

1. Defining a clear position for the school in society, above all with respect to its function in cultural development, vocational profiling and social purpose.

2. Changing the content of curricula so that they (a) express linkages in the fields of general human knowledge, practical experience, scientific results and art and aesthetics; and (b) use didactic and methodological techniques which stimulate the development of the pupil's personality.

3. Outlining educational curricula to reflect an open system that is accessible to continuous innovation based on changing external and internal factors at two levels: (a) the national level and (b) the school level:

   - *The basic, national curriculum* must be outlined so that characteristic educational policy priorities (which reflect and define national levels of education in terms of functions, goals, content, scope, key skills, didactic concepts and assessment and certification processes) are applied to each educational level. At the same time, the national curriculum must respect key convergence points in educational paths and support their smooth continuation and compatibility; and

   - *The school curriculum* for actual schools that must be compiled (or selected from a pool of model programmes) by the individual schools themselves. They would base their programming choice on the guidelines of the basic, national curriculum and strengthen their competence by specifying actual, educational projects for the school which involve curriculum modifications according to regional and local conditions, possibilities and needs.

4. Balancing educational content to include the actual, national and European traditions which aim to guarantee educational achievement levels which, through assessment and a system of certificates, would be compatible with the requirements of an integrated Europe.

5. Defining a space and finding mechanisms for active public, social-partner and parental involvement in school life, while respecting regional requirements.

Of course, problems involving curriculum innovation are not limited to the technical aspects of curricular project development only. Ultimately, the form that educational programmes take (for the various kinds of schools and fields of study) is particularly influenced by the overall concept of education. Indeed, the form of an educational programme is the outcome of a complicated and dynamic social process which is also greatly influenced by political forces and, in vocational education, by other interested parties, such as employers' representatives.

## D. The concept of curricular projects

The principles of flexibility and adaptability are basic to the concept of curriculum innovation. The questions of *what, how* and in *what form to teach* will not be dealt with here. What will be discussed is how the curriculum should be organised to secure a certain degree of educational comparability and, at the same time, to create sufficient room for initiative and participation by all the individual schools interested. The curriculum must be designed so that it is possible for individual schools to develop a variety of educational paths able to adapt to supply and demand. This requires accepting two seemingly contradictory conditions, namely:

1. guaranteeing educational comparability among schools offering a certain level of education;

2. facilitating a broad variety of educational opportunities which would correspond to the increasingly diverse and differentiated needs of both the educational target group and the labour market.

Educational-level comparability would apply only to standard requirements. It would aim at guaranteeing the broad base of education required for life-long learning and, most importantly, for the mobility of school-leavers. Apart from this basic education, it is vitally important to give schools themselves (perhaps with pupil involvement) the opportunity to modify a substantial part of the curriculum according to their specific needs.

## E. The basic vocational education curriculum

The fundamental requirements for building a basic (national) curriculum should include the following:

1. *Openness in framework development* with options for adaptation at lower levels of decision-making, such as the regional level and the school level;
2. *Orientation towards minimum requirements* particularly in terms of the need for educational articulation and continuity at other school levels, and because of the lack of certainty in developing special vocational-education qualification requirements.

Thus, the basic curriculum guaranteed by the State should, above all, have the following functions:

- *A modelling function* for making concrete educational programmes in individual schools; and
- *An integrating function* for ensuring educational-path compatibility, systematic character and meaningfulness in the education being acquired.

The basic vocational education curriculum should be "general" in nature so that it can be linked directly to output qualifications for individual professions or branches. This means that there would be a "general" body of information — a common curriculum component — for the various education levels, while specific components would focus on entire educational streams. The specific components would correspond to branch clusters based on similar educational content (e.g. mechanical engineering, electrical engineering). Thus, approximately twenty (20) educational streams would be defined, in which, within a particular educational level, that level's portion of the basic curriculum (centrally fixed general rules and basic features necessary for creating the school curriculum) would be included. Based on this approach, the national curriculum would include the following educational-level characteristics:

- a definition of the relationship between a particular level and the length of education;
- a basic characteristic of the general-education component;
- the component's share;
- the basic design of the system; and
- the requirements for the general qualification prerequisites needed for placement in the labour market, known as "key skills" (problem solving skills, communication skills, analysis skills, computer skills and co-operation skills).

These would pervade the content of the entire curriculum. Apart from these general, valid requirements, the specific portion of the curriculum dealing with a given educational stream, would contain some characteristics of the following: (1) the basic-vocational and the specific-vocational component; (2) theoretical education; and (3) and practical training.

All of these would be defined on different levels of generalisation depending on the character of the education to be provided. The specific portion of the national curriculum should contain references to a separate set of approved or registered syllabuses and/or educational modules which would be used to compile the school curriculum.

## F. The school curriculum in vocational education

The school curriculum should be based on the general characteristics of the national curriculum and mirror its internal structure. A model offering various possibilities for developing the school curriculum should be provided as the basis for compiling a concrete curriculum at the school level. This model would be in project form, comprising individual subject-matter units (e.g. syllabuses, modules, etc.) and/or entire educational programs.

Thus, the school curriculum, whether it is in project form (of individual subject-matter units) or entire educational programmes, could be:

- previously prepared as an offer to individual educational establishments;
- made to order for individual educational establishments by specialised pedagogical institutions; or
- developed directly by educational establishments for their own use.

When developed in this manner, school curricula would only need to be registered according to simple registration rules which would ensure all or some of the following, depending on the curriculum:

- compliance with basic curriculum; and/or
- collaboration with another organisation (an employment agency, the education council or employers' representatives) while compiling the curriculum.

The curricula would then be centrally filed for information-system needs.

## G. Vocational education curriculum type models

Vocational education curriculum type models should be centrally prepared and emerge gradually to be offered to educational establishments for their optional use. On the basis of an analysis of existing vocational education programmes in The Czech Republic, the following type models may be distinguished:

- *Type #1: A continuous branch of vocational study* which is not divided into stages, but has a continuous, linear character from beginning to end;
- *Type #2: An Educational process arranged in stages* which specialises in a given professional area and is arranged in several stages, each one of which: (1) may or may not lead to an officially recognised certificate or diploma,; or (2) may close an individual educational level;
- *Type #3: A gradual specialisation* which begins with a single study programme and which, after a certain period, divides into more narrowly focused vocational clusters (specialisations) from which pupils are free to choose. This process may be repeated several times. At the beginning, the field of study is usually fairly general. Then the educational path divides at different intervals throughout the study process. Gradual specialisation begins with providing a common basis for study, obligatory for all pupils. The share of the common subject matter and practical experience is greatest at the beginning; then it gradually decreases as the number of continuous education choices expand.

The three vocational education type models may be initiated at the school level or at the national level (based on results of pedagogical research). New curricular models complement and broaden educational-path offerings. By combining the types of educational paths offered at different educational levels, students have more choices. There are more educational-path options which lead them to new, different educational domains.

## H. Modular arrangement of the curriculum

Concrete educational programmes may be arranged in the curriculum by subject or they may be organised in specific blocks, or modules. Modules can go beyond the subject-matter framework and then link to other subjects to form complex, inter-linked educational units.

The relative independence of modules makes it possible to think of them as elemental units in a construction system which can be built into a diverse variety of educational paths. The relationship between modules is somewhat loose (although certain rules of continuity do exist); however, modules are designed to be flexible, to facilitate a broad variety of combinations and to offer a large number of choices and possibilities. Thus, because the modular approach is most suited to flexibility (and the accuracy without which such flexibility could not exist), The Czech Republic has applied the modular approach experimentally in several schools within the Phare programme.

Within each module, objectives define the results foreseen in the learning process, i.e. the knowledge and skills the pupils will have learned when they complete the study of that module. Within a given module, the instruction content is much like a series of references; thus, the primary purpose of the modular concept is the shift of attention from "taught material" to pupils' "learning activities". The results of their learning, based on the objectives set for the module and by the student, in turn, are the basis for assessing to what extent learners mastered the module.

It is possible to distinguish two basic modular structures which may be used as educational construction elements, as follows:

1. A modular structure designed for a field of study; and
2. A modular structure designed as subject-matter units.

In the first (field of study) modular structure, where what is to be constructed is an entire (or a relatively large part of) a field of study (sometimes spanning several grades), a divided or combined modular system may be built. A divided modular structure is characterised by the gradual division of the educational path, i.e.,. after completing one module pupils may choose from other specific modules which offer continuing study. However, for every module chosen, in this model, only one previous module exists. In the combined modular system, more choice of modules is possible. After completing the primary module, pupils may choose from all secondary modules.

In the second modular structure, the element to be constructed is an entire subject-matter area. This may be parallel to a subject being taught or it may be like an educational module. In the latter case, the modular structure may be defined, use a framework, or be undefined. In a *defined* modular structure, modules are outlined as educational programme components and, depending on the school-leaver profile, may be divided into several groups as follows: (e.g. common-basis modules, specialisation modules, preparatory modules, special-interest modules). The *framework* modular structure and the *undefined* modular structure are built of modules which are like separate instruction units. These kinds of modular structures provide a relatively large array of individual modules from which pupils may choose freely. To better focus on the possible combinations of modules it is appropriate to build recommended sets of modules.

In modular structures, no one module is completely isolated. One module is either the basis for the following modules, or it is preceded by other modules to which it is linked. Apart from these connections, the system provides parallel modules to which it may or may not be connected. Every educational module contains the following three elements:

1. *The input system* which expresses the function and position of a certain module in the entire modular programme;
2. *The core* which specifies and defines the results to be attained upon completion of the module;
3. *The output system* which contains the way(s) in which module completion will be evaluated.

The input system of an educational module aims at informing learners how, in what way, under what circumstances and for what purpose that module is to be used. It is assumed that the input system will serve as a module description and will be included in a catalogue of modules. These input specifications also consist of the module's name, the module code, encoded input information, the module characteristics and the required input prerequisites. The most essential part of the module is its core which is composed of the following:

- the objectives — the foreseen results to be attained by learners upon completion of the module;
- the contents of the module; and
- the instruction techniques recommended.

The foreseen results of studying the module are of crucial importance. These are best constructed in the form of concrete, clearly defined, controllable educational objectives, corresponding to overall, general objectives of the entire module. The foreseen results determine what a student should be able to show as the result of studying the module. Thus, because they define a certain ability or capacity to perform specific activities at a certain level, they form the basis for modular performance evaluation. The content of the module includes a list of recommended topics that forms the basis for attaining the required results. Recommended instruction techniques complement the study; they suggest methods which lead to the foreseen results. A key element in each module is its output system which defines assessment criteria for module completion. Apart from assessment criteria, the output system contains assessment procedures.

In the Czech Republic, at present, the school curriculum uses the modular approach as one didactic and methodological alternative in the area of secondary and higher professional education. Further, the modular approach is not being introduced forcefully, but is being implemented within the framework of the existing school structure as an approach to be gradually improved upon and developed. Thus, the two following approaches may be considered:

1. Introduce the elements of the modular system into the entire existing vocational education structure *gradually, in stages;* or

2. Use a modular arrangement for vocational education curricula as an alternative to selected educational clusters and branches destined to be carried out only in the educational establishments which will create the appropriate conditions for it.

# PART II:

# PROBLEM SOLVING - THE NEW QUALITY OF WORK AND LEARNING

**Problem solving: how to manage uncertainty**
by Bernhard Buck

**The relevance of key qualifications in the transition process**
by Janko Mursak

**Choosing the internet approach: "learning by doing"**
by Robert Blom

**Problem solving in a learning organisation**
by Paul Olry

**The implications of ecological awareness on problem solving**
by Hilde Biehler-Baudisch

**The (re)integration of work and learning**
by Andre Hendrikse

# PROBLEM SOLVING: HOW TO MANAGE UNCERTAINTY

**Bernhard Buck**
**The European Training Foundation**

## A. Certainty: the paradigm of the past

The countries of Central and Eastern Europe (CEEC) are in the throes of a complex transformation, coping with the challenges inherent in changing centrally-planned societies into democratic, market-oriented ones. At the same time, the European Community is challenged with developments in global trade and internationalisation. As a consequence, the economic situation in Europe's developed countries is also being transformed in reaction to the structural change of the market, from a *supply* to a *demand* orientation.

With their high expectations of the democratisation process and the uncertainty of labour-market requirements, the CEEC face far deeper and wider crises than the EU Member States. However, the consequences for vocational education and training for both the EU and the CEEC are not as different as might be expected. One reason is that, also in Western Europe, vocational education and training is not "politicised", in the sense that it supports the personal qualifications of the individual. Therefor, not without reason, the White Paper "*Teaching and Learning - Towards the Learning Society*" describes the following aims as challenges for European vocational education and training:

- To place emphasis on the role of the individual as the main protagonist in society who, through self-reliance, takes charge of his/her own future. Therefore, vocational education and training should support personal development; and
- To stress vocational education and training as an important instrument in the successful integration of people into society and as a key to seizing opportunities for improving society regardless of the individual's social and educational background.

A further reason why both the EU and the CEEC face a common challenge is that, both in the East and in the West, vocational education and training involves work procedures which, to a large extent, are still organised Tayloristically and bureaucratically. Thus, traditionally, vocational education and training is strictly divided into (1) the performance of duties which are separate and distinct from (2) the planning and monitoring of these duties. At the worker level, work is broken down into routine and standard duties, tasks and activities. Product specification, production procedures and testing are defined as clearly and reliably as possible. And, to the greatest extent possible, uncertain and vague working processes are excluded.

Within management's pre-planned, determined and monitored procedures, the single worker is not viewed as an individual personality. In general, the worker is not asked what he or she thinks about a certain process. Instead, the workers' required competencies equal their ability to arrange their duties according to customary, subject-specific qualifications. The way they are to perform these duties and their goals are clearly defined. Under these circumstances, learning is defined as the acquisition of skills and knowledge and vocational education and training's educational goals are geared towards workers carrying out their occupational duties reliably. Vocational education and training itself is viewed as a process, governed by rules, which can transfer the necessary skills as long as the teaching and learning processes are planned in detail, efficiently run and closely monitored.

This concept of vocational education and training is characterised by the principle of *routine and standard procedures*. Still today, this concept, dominates approaches to vocational education and training, even though dramatic changes have taken place. Over the last two decades, two striking changes in the organisation of work have occurred in Western Europe. They have challenged the responses of vocational education and training systems, as follows:

1. At the beginning of the 70s existing vocational education and training systems were criticised for not incorporating technological developments. As a result, the 80s saw the status of skilled workers substantially improved. Now workers were expected to plan, execute and monitor their given tasks independently. They were no longer supposed to carry out duties prescribed by a third party, but to perform occupations in a self-directed and self-monitoring manner. Accordingly, vocational education and training systems were supposed to equip trainees with this needed self-reliance.

   This so-called "occupational performance competency" can only be achieved, however, if learners are considered actors, who — within their respective learning environments — acquire the necessary qualifications for the tasks they must direct on their own. Such self-directed learning processes may be promoted by methods which give the planning, executing and monitoring of learning tasks to the learner or group of learners themselves.

2. In the face of the situation at the end of the 80s (when markets became increasingly more turbulent and globalised under the banner of "lean production") the public became more aware of efficiency in company operations. A new kind of organisational concept based on the just-in-time — JIT — system (which had been developed in Japan by Toyota in the early 50s) emerged. The Western world gave this organisational type its name after the MIT-study by Womack et al (1990). According to the "lean production" concept, the vicissitudes of markets are responded to most efficiently by a robust, perfection-oriented organisation, which is prepared to react to all imaginable market conditions (Kühl 1995).

Lean production thus requires an expanded concept of "occupational-performance competency" because qualification requirements must now encompass the entire functional, organisation process. Under these new, work-organisation conditions, production department staff members are increasingly involved in so-called "integrative task-awareness". In other words, they no longer separate how they think about and use their technical skills from how the work is organised; they must think about production as part of commerce. The same also holds true for administrative staff whose contact with the production department was narrow and direct. In principal, today, administrators must also be able to troubleshoot technical problems. Thus, many JIT companies gain and bind clients by providing special services and technical support for their products.

The required transformation of the company's overall system in response to systemic performance competency goes beyond its impact on single occupations. The resulting "function-oriented capability clusters" have a dynamic effect on dissolving segmented labour markets. The implications this has for vocational education and training systems oriented to national standards is obvious.

Despite the spread of "function-oriented capability clusters" throughout the workplace of the 90s, the concept of lean production maintains principles which are typical of tayloristically-structured organisations. Within the context of this paper, some important aspects of such organisations must be kept in mind, as follows:

- Hierarchy guarantees direction and carries through on performance requirements. The superior directs duties and monitors and evaluates performance. What must be achieved by the worker is fixed in detail by the company (Gerst/Hartwig/ Kuhlmann/Schumann 1995).
- Traditionally, in Japan: (1) teamwork is based on a collectivistic approach; (2) the *self-directive* feature of European teamwork is very much restricted by organisational conditions; and (3) a delicate hierarchy exists — in the team, in just-in-time-management and in the permanent use of computer-driven monitoring technologies (Brauer 1993).
- Performance is still achieved and measured by a series of routine, standard work tasks through a basic orientation to a "security stra tegy".

The organisational and vocational education and training concepts described above which continue to maintain Tayloristic principles and security strategies still respond to the economic conditions of a supply-driven market. They are steered by the demand to curb market conditions.

## B. Coping with uncertainty

What are the characteristic differences between supply- and demand-driven market economies? In a supply-driven economy the company's product is the focus of company interest; the product is supposed to be: (1) produced in high numbers of units, with low cost per unit; and (2) sold at the highest possible profit. The society as a whole lacks the necessary goods for daily life. Thus, its basic needs must be satisfied. As a consequence, the supply-market economy gives certainty to the company which then organises work according to the principles of routine and standardisation.

In segmented and highly differentiated demand-driven economies, however, the customer is in a stronger position Companies must learn to focus their production goals on the individual's specific needs and to compete with other companies to satisfy customer needs. Because this is the present situation in Western industrialised countries, vocational education and training systems must redirect their goals, content and methods in the same direction.

Even though CEEC economies are not yet demand-driven, the middle- to long-term perspective seems to point in that direction. In economically progressive countries, the change in direction (from daily life necessities towards individual needs) is apparent. This situation not only changes economic conditions but impacts on people and institutions — the entire consciousness of society. In demand-driven economies people are partially freed from the plight of day-to-day existence and, supported and promoted by media avenues such as radio and TV, are able to articulate their material needs. Along with this comes a diversity of lifestyles and a new value orientation which has a great impact on the attitude towards work. The individual has become important. People want to be taken seriously. Social relationships have become more crucial than subject-oriented requirements. All of this is leading to a situation which can be described as "individualisation in the attitude towards work" and can be restated as, "Work, yes. But I should also actualise myself. I should gain personally from what I am doing".

Thus, in view of these tendencies towards work and personal attitudes, CEEC vocational education and training systems should start now to develop a perspective towards this "new quality" of work and life which continues to gain ground in Western countries, particularly because of the democratic potential of individualisation and personality development. Indeed, what does this mean for vocational education and training?

## C. The "new quality" required of vocational education and training

This "new quality" has become a fundamental consideration for vocational education and training. It may be illustrated by an industrial business administration example. Under demand-driven economic conditions, administrative work is losing its dominant role within organisations. The profession itself has been changing and is now doing more "problem solving" work, which may be characterised as *thinking about*:

- *customer* requirements, requests and conditions, from the customer perspective;
- imaginative, reasonable and economically suitable proposals which offer *possible solutions;*
- concrete *reality* through different forms of consultancy, analysis and negotiation.

In general, one can say that, today, the industrial business administrator not only has to know how to deal with situations and how to perform given procedures (the case under supply-driven economic conditions) but he or she must also be able to apply flexibility to and bring the wishes of customers in line with the *possibilities* of the company — in constantly changing, open-structured and undefined situations. The traditional image of the "expert" must be replaced by the in-house "situation problem solver."

As can be seen from this example, the new quality has to do with *uncertainty*: Problem solving is the ability to cope with manifold practical situations. What the related situations have in common is that they, unlike processes which can be regulated, must be carried out in a climate of uncertainty where the consequences are unknown.

The definition of work is also changing. *Work* may no longer be considered an activity which can be clearly and reliably *completed*: work must now be considered a service to the customer and to one's company. This is based on two realities:

1. Customers are no longer just paying for the product itself, but are paying for the solution of their problems or for the satisfaction of their needs. They are interested in the product only insofar as it helps them solve their problems.; and
2. What is decisive for success in the market is not whether competitive advantage exists on the technical side, but whether the product is perceived by the customer as an advantage.

The change in the meaning of work may be expressed by the reality that work is no longer a function of relating to objects, but of relationships between people, their possibilities and needs. It is true that producing a technically perfect product will remain a necessary condition for sales, but it is no longer a sufficient condition for a company's market success.

## D. The individual ability to act

Within the framework of this new understanding of work, workers are not only expected to perform the duties given them by their company, but are offered tasks and problems and urged to interpret and act on them. Workers are expected to bring them into harmony with their own ideas and/or to try to contribute to their adjustment or change.

For workers, the required ability to act thus also means that they may be able to: (1) have a part in shaping the objectives and cultural actualities of their company; (2) discover the situational frontiers of their potential to act; (3) estimate the consequences of their actions and, in cases of disagreement, rely, consciously, on their own point of view. Such an "individual ability to act" is based on an experimental attitude towards work, which — in a given situation — tries to realise suitable kinds of work. Accordingly, vocational education and training must develop, first and foremost, the initiative of the learner. The learning process must promote self-organised experimentation (Buck/Weilböck-Buck 1993).

The individual ability to act requires that the individual demonstrate:

- *an ability to shape*, i.e. to find a particular solution to fit the circumstances; to solve the problem;
- *self-confidence*, i.e. the ability to perceive uncertainty as a condition which allows for the possibility of "shaping";
- *communication*, i.e. the ability to express one's point of view, to honour the opinion of others and to come to agreement.

On the one hand, these are basically human abilities. In the West most adults are forced to develop these kinds of capabilities. In one's adult private life, there are no superiors telling you whom to marry, how to organise your relationships, how to bring up your children or how to finance your new house. There are no superiors who decide which personal computer you should buy and how to operate it, or in which field you should be trained, how to use your spare time and how high you should aim.

On the other hand, the ability to act under conditions of uncertainty is bound within a particular social system. Indeed, today parents and students in the CEEC, after decades of planned development, constrained freedom of speech and dependence are now forced to make far-reaching, complex decisions about their own lives — including how to enter the vocational education and training system and other professional paths — without knowing which path will be the best one.

Notwithstanding the differences between East and West, however, the ability of workers and clerks to make day-to-day, private-life decisions had been forgotten in the workplace. Over a long period of time they had been asked to put aside their ability to solve problems because of the tayloristic/bureaucratic/hierarchical structure of companies and institutions. The hidden agenda of institutions was to train the workforce to exhibit and practice dependent behaviour.

## E. Self-organised learning

Vocational education and training must examine learning situations which support learners' ability to act. In general, it can be said that an individual's ability to act may be acquired within learning situations in which learners — in co-operation with others — can organise their own learning activities in terms of goals, content and method by themselves, to the extent possible. Self-organised learning is much more far-reaching than self-directed learning. The issue is not whether students can learn the task given to them, in a self-directed manner. The issue is that they themselves should decide on the learning task, the content and the method.

*Self-organised learning*, therefore, can only take place within communicative contexts in which learners decide, on their own, to learn and to proceed according to what has been given to them as a learning task. What is decisive is that they themselves decide about the learning task, content and method (Zimmer 1996). An organisation which fosters self-organised learning is thus called a "learning organis ation".

## F. Implications for the organisation of work: an example

The following is an example (Schmidt, 1993) which describes the kind of conflict that can arise when workers or clerks act reasonably under uncertain circumstances in an organisational context which is not prepared to give them the necessary scope.

A staff member from the Purchasing Department is asked by his superior to order a rather complicated spare part needed for a large installation. He discovers that this part does not exist and must be constructed. So, on his own initiative, he writes to several companies to ask them to submit offers along with construction plans for the part. He plans to discuss these offers with the other members of the company's Production Department and to then order the most economical and technically appropriate part. The Head of the Department hears about this process and orders the person to have the part produced, at once, from a specific company.

*What happened was that the staff member wanted to act self-reliantly, but the Head of the Department brought him back into line.*

*The Head of Department comments:*

*"the person acted too independently;*
*his idea might be good,*
*but I make the decisions around here!*
*(the rest he keeps to himself)*

*The person comments:*

*"The Head of the Department has the say;*
*the whole experience doesn't seem*
*to make any sense.*
*I thought I was helping.*
*But I have to do what he wants,*
*you can't change that."*
*(the rest he keeps to himself)*

The persons involved acted and behaved on the basis of the pattern of a hierarchical, "*either-or*," pattern of decision making. They did not see the context in which each operated and therefore they did not recognise that they reinforce each other's attitudes. What would happen if the persons involved combined their solutions to the problem and behaved on the basis of an "*and*" pattern of decision making. How would they behave under these circumstances?

The example clarifies another interesting point. Obviously, the Head of the Department and the staff member operate under different principles. The hierarchical organisation was built on *power-centred* competence. And this approach is employed by the Head of the Department. The competence of the staff member is limited to performing necessary tasks on the basis of his customary, subject-specific qualifications only.

The distinguishing mark of subject-specific expertise — as a traditional measure of competent work according to professional standards — is that work can be performed using rigorous technical standards and, therefore, the outcome can be clearly and reliably tested. Subject-specific expertise comprises a formula of skills and knowledge, valid for all work requirements and "cleaned" of all situations of uncertainty and personal direction.

What did the person give himself permission to do? Did he act strongly according to his subject-specific expertise? The task he was given could not be performed on the basis of pure knowledge and rule-oriented behaviour only. The task contained *imponderabilities*, uncertainties, which could only be eliminated through a personal decision-making a new choice about a "reasonable" procedure.

"Decision-making ability" is a category of action — or, as we say, a key qualification — which is not only beyond subject-specific expertise, but one which belongs to the Head of the Department's

hierarchical competence. Only he, himself feels entitled to make decisions. This is why he became upset. His very role was being threatened. From this example, one also can see that:

1. Although the principles of "subject-specific expertise" and "hierarchical competence" are separate, functional principles, they have become bound to each other and are mutually dependent. From this perspective, there must be an initiator who decides how the work will be done and a follower, who knows how to do the work.
2. The ability to act with initiative under uncertain conditions is in direct conflict with the principles of "subject-specific expertise" and "hierarchical competence". Subject-specific expertise does not include decision making; however, it is a necessary element of the ability to act. Hierarchical competence is power centred, whereas the ability to act is based on knowledge and experience.
3. How work and vocational education and training are shaped is based on organisational structure. An effective change in one (for instance the integration of key qualifications into work or into initial and continuing vocational education and training), cannot be achieved without a corresponding change in the other (e.g. the dilution of hierarchical competence by conceding a greater scope of action, within work and learning, to workers and learners).

## References


1. H. Brauer: *Arbeitslos oder Arbeit - im Streß - einige Anmerkungen zu "lean production"*, in: J. Howald/H. Minssen (Hg), *Lean, Leaner...? Die Veränderung des Arbeitsmanagements zwischen Humanisierung und Rationalisierung*. Dortmund 1993
2. B. Buck and I. Weilnböck-Buck: *Berufsbildung im Zeichen eines Paradigmenwechsels*, in: B. Buck, I. Frank, I. Schupp, I. Weilnböck-Buck, *Zur Ausbildung von Industriekaufleuten. Bedingungen und Möglichkeiten von Erfahrungslernen und Praxisverständnis*. Berichte zur beruflichen Bildung, BIBB - Bundesinstitut für Berufsbildung, Heft 158. Berlin, Bonn 1993
3. European Commission: White Paper: *Teaching and Learning. Towards the Learning Society*. Brussels, Luxembourg 1995
4. D. Gerst/Th. Hardwig/M. Kuhlmann/M. Schumann: *Gruppenarbeit in den 90ern: Zwischen strukturkonservativer und strukturinnovativer Gestaltungsvariante*, in: SOFI-Mitteilungen, Nr. 22. Göttingen 1995
5. St. Kühl: *Wenn die Affen den Zoo regieren. Die Tücken der flachen Hierarchien*. Frankfurt/Main, New York 1995
6. J. Schmidt: *Die sanfte Organisations-Revolution. Von der Hierarchie zu selbststeuernden Systemen*. Frankfurt, New York 1993

7. J.P. Womack, D.T. Jones, D. Roos: *The machine that changed the world.* New York 1990

8. G. Zimmer: *Selbstorganisiertes Lernen in der Berufsbildung. Thesen zu Begriff und Konsequenzen*, in: Arbeitsgemeinschaft Berufsbildungsforschungsnetz (Peter Diepold, Hrsg.), *Berufliche Aus-und Weiterbildung. Konsequenzen/Divergenzen, neue Anforderungen/alte Strukturen.* Institut für Arbeitsmarkt- und Berufsforschung der Bundesanstalt für Arbeit, BeitrAB 195. Nürnberg 1996.

# THE RELEVANCE OF KEY QUALIFICATIONS IN THE TRANSITION PROCESS

**Janko Mursak**
**University of Ljubljana, Slovenija**

## A. "Qualification" as a social phenomenon

The term "qualification" has various meanings, depending on the author and the context in which it is used. Even so, we can identify a common essence in all of these meanings. French sociologist J. Thomas explains "qualification" as *"un jugement porté sur le niveau et le degré de compétence d'un individu, compte tenu de l'emploi qu'il tient"* (a judgement concerning the level and grade of an individual's competencies, relating to the job that he holds) (Thomas, 1990). The same author understands "qualification" as a social product determined by different factors. This means that we cannot consider qualification to be merely a certain amount of practical and technical skills possessed by an individual: the social dimension of the qualification must also be included. This social dimension comprises the:

- social recognition of the individual's competencies; and
- individual's belief in him/herself as a competent, qualified person.

If we simplify the statements above, it can be said that *qualification* is defined :

- by the system of an individual's self-esteem and one's expectations about one's work career; and
- the objective situation of that particular vocation/qualification itself on the labour market.

Each qualification consists of an objective as well as a subjective element. The objective element is valued on the labour market and in the social environment; the subjective element is defined by the individual's self-concept. Both represent the basis for developing one's vocational (professional) identity as a part of one's overall social identity. Qualification is thus, in this sense, the essential dimension of social identity, incorporated into the personality and outlined, realised in work as well as in social practice (Dubar, 1991).

## B. Components of "key qualifications"

The qualification structure has two components:

1. Practical skills, technical and theoretical knowledge; and
2. The way these are combined in a qualification unit with its proper economic and social value.

Qualifications can be acknowledged only on the basis of both components. To establish a hierarchical, structurally integrated system of qualifications, it is necessary to define a common approach — a modality — for composing, combining and recognising practical skills and knowledge. This modality also defines the basic, key elements required for structuring the practical skills and knowledge for certain types of qualifications.

While fundamental practical and technical skills vary from one qualification to another, the modality (the approach used for combining and binding them) must remain similar or equal for different qualifications and/or qualification families. This modality comprises key elements, called "key qualifications" as proffered by Smith during the 1995 European Training Foundation Advisory Forum (European Training Foundation *Advisory Forum Report* 1995). Smith distinguished two categories of key qualifications: (1) key qualifications closely linked to an individual's behaviour; for example, the ability to work in a team; and (2) key qualifications concerned with cognitive skills; i. e. knowledge about the elements of a particular occupation.

For the purposes of this paper, the definition of "key qualifications" is, thus, as follows: "A key qualification is an indispensable social, technical, cognitive and educational composite of the requisite, particular qualifications common to different occupational families, which are also of crucial importance for (1) the social recognition of the qualification; (2) the adequate constitution composition of the individual's vocational identity; and (3) his/her placement in the labour market." In this sense, key qualifications represent a transverse qualification dimension across all qualifications.

A person's place in and opportunities derived from the labour market depend strongly on the quality of the key qualifications that underlie highly formal and socially-recognised qualification systems. As mentioned previously, under the changing conditions of advancing modern technology and new trends in the organisation of work, to master only technical and practical skills is not enough. It is necessary for individuals to have the ability to improve their skills, to be able to use new technology and to function under new working conditions. The ability to learn, to understand new technical conditions, to "retrain" and "innovate" beyond existing knowledge is the third category of the above-mentioned key qualifications.

Because the term "category" connotes classification and the term "dimension" connotes a broader scope, the term "dimension" will be used for the discussion that follows. Thus, three key qualification *dimensions* may be distinguished: (1) social; (2) technical; and (3) educational, as follows:

1. *Social*: concerned with the abilities to communicate (including foreign languages), to co-operate, to understand the social environment of the workplace;
2. *Technical*: concerned with cognitive skills, conceptualisation and understanding the working process, informational technology; and
3. *Educational:* concerned with an individual's capacity for further training and retraining with special regard to self-conducted learning and occupational self-reproduction.

This definition of terminus (or end) "key qualifications" remains questionable, for its use has not yet become common and it needs further investigation. Even so, the following discussion uses the term "key qualification" in the sense described above.

Here another question must be raised: "Is it possible to identify common, "key qualifications" as described above, in different vocational education and training systems?"

The answer is "yes." There is a common trend inside the European Union, CEE countries and Tacis countries to identify the so-called key skills—or, in the broader sense, key qualifications—where emphasis is put on the issues maintained above, and, in a more precise way, described also in the White Paper (See: Teaching ... 1995). We can assume then, that special emphasis should be given to:

- developing as broad a knowledge base as is possible, under the circumstances, which will enable individuals to react actively given their work and life conditions;
- acquiring those methodological skills and knowledge which enable a person to learn alone (this is the main condition for maintaining an individual's level of employability);
- promoting language learning to enable individuals to communicate so that they can cooperate (this is an extremely important "key qualification" for small nations for which co-operation is a crucial issue);
- developing a clear identification with an occupation (this will enable the construction of a professional identity as a basis for further training and development);
- promoting greater autonomy as a condition for beneficial co-operation with others and an ability to combine autonomy and the capacity to work with others; and
- most importantly, entrepreneurial training in how to set up a business; this is of special importance in the transition countries where private initiative should be supplemented with adequate knowledge.

Although the above are only some "key qualifications", their importance demonstrates a vital need for achieving consensus on their promotion and implementation so that key qualifications become the common ground for vocational education and training curricula innovation in all countries and are integrated appropriately at all levels of education and training.

## C. Qualifications in the transition processes

Central and Eastern European countries in transition are making structural changes in qualifications, most of them in regard to the *social* qualification dimension of qualification. The following briefly describes these changes.

Before political changes took place, the State guaranteed employment for everyone. This was a time of full employment, a time in which minimal social security was offered to everyone. Societal recognition of qualifications did not require workers to go on the labour market. Thus, an individual was not obliged to verify his or her employability by competing on the labour market. All one needed was to possess so-called "paper qualifications", as The European Union's *White Paper* called this kind of qualification. Paper qualifications were obtained in schools inside the education system; they were all that counted. They were sufficient — all that was required to recognise a person's qualifications.

Without doubt, "paper qualifications" have their advantages. As they are linked to the school system, they follow national standards, which are defined and controlled by the State. They assure a good level of general knowledge as well as good, basic, theoretical, technical knowledge. But the general deficiency of qualifications so obtained is the fact that they are not acquired in a working environment and they are not related to a real job and the real world of work. The consequence is that (1) their value is abstract; and (2) they are somewhat artificial.

Vocational identity and, as a consequence, social identity was thus built on this "paper qualification" system which was recognised by State-owned enterprises with no regard for the real situation. Indeed, the labour market was essentially non-existent.

Social change generated a new situation. Individuals and their qualifications faced a competitive situation in the newly-emerging labour market in which "paper qualifications", based on school-leaving certificates, no longer guaranteed an individual's vocational and social identity. Indeed, one's employability level has become, for most people, a new phenomenon. The value of formal education is measured by the level of employability it offers.

In other words, it can be said that, after the political changes, the process of evaluating qualifications began within the labour market. Old-fashioned vocational identity became unstable and uncertain and the need for change in the content of qualification emerged, especially in the social dimension.

The position of an individual is often contradictory because his or her technical knowledge exceeds the needs of the labour market, so the person is obliged to accept less demanding work than he or she is qualified to do. This creates social degradation, dissatisfaction with the situation and serious difficulties in reconstituting the worker's vocational identity.

At this point individuals are obliged to reflect on, adapt to and perhaps change their position toward some key relationships that result from the new situation. This infers the reconceptualisation of the social qualification dimension. (For more detail see: Mursak, 1994, pg. 279)

The individual must reconceptualise his or her relationship towards:

- *the work,* which has become re-valued and does not ensure that everyone is appropriately positioned;
- *the enterprise,* where a new, interdependence emerges: the economic prosperity of the enterprise also means economic security for the employee;
- *vocational education and training,* as a means to maintain and obtain a certain level of employability or a means to improve one's employability;
- *workers' organisations,* mostly the newly emerging trade unions, which help to maintain one's professional/vocational identity under conditions in which the work situation is ambiguous; and
- *the school certificate,* which no longer ensures one's vocational identity and which can be obtained only within a real work situation.

These new relationships can be reconceptualisated only by those individuals who have the opportunity to develop and practice adequate social skills — or, so to say, the relevant "key social qualifications". During transition, the precondition for this was the individual's basic-skill level and the quality of his or her "paper qualifications"; however the most important condition was full employment in a real, new work situation. Looking at unemployment from this point of view it is clear that there are two groups which are excluded from the innovative social key qualification process:

1. Older workers whose extremely narrow practical skills have no broad social and economic recognition in the labour market; and

2. Young school leavers with good paper qualifications and school-leaving certificates, sometimes of a very high level.

New training programmes should be developed for the second group, but this process is too slow for many reasons. Some of them will be explained below:

For older workers with narrow practical skills, the situation is much more difficult than that for educated youth. Even so (as "circles of employment" show), to get a job and to remain competitive in the labour market, it is as important to demonstrate social competency (staying socially active, seeking new opportunities, occasions, communicating, and adapting one's work abilities to new conditions) as it is to possess real practical and technical skills. In other words, those whose key qualifications are better and whose knowledge has broader transferability, are in a better position vis-à-vis the labour market. Indeed, evidence shows that a person who attains any kind of education and training during an unemployed period shortens the period of his or her unemployment.

Sometimes at lower qualification levels, the key skills needed are as simple as knowing how to fill out an application form, or how to read announcements. On the other hand, for those who are more highly qualified, the level of employability depends on former references and knowing basic information technology; however, most of all, it depends on one's ability to acquire new knowledge and the methodical skills necessary to engage in further training, retraining and self-directed learning.

Indeed, in general, the economic upheaval of the transition process, with some exceptions, does not signify a lack of technical knowledge in the workforce. Rather there is an inability to find adequate social and economic solutions to the problems presented by the new situation. This is a consequence of the past professional socialisation of the active work force in transition societies that took place under the previous social and economic conditions.

If we pose the question, "Which "key qualification" is the most important in the transition process?" it will not be easy to answer. Without doubt, the ability to combine existing technical knowledge and practical skills with the new needs of the market economy — especially those dealing with cooperation, social skills, autonomy and learning ability — is extremely important in the transitional process. But one must keep in mind that there is no special "transitional key qualification" in and of itself. Each good qualification must have a set of well-balanced, integrated components, without regard to where it should be implemented.

## D. How deeply is a transitional economy able to be involved in the (re)training process?

Clearly, in the present, transitional situation, various kinds of professional/vocational resocialisation processes are needed for those already employed. On the other hand, the question remains, "Is it possible to successfully develop a new kind of vocational identity for youngsters (with all the key qualifications necessary) within the existing education and training network?"

*The White Paper* statement on the social dimension which follows forcefully argues the author's position on this matter. "Social aptitudes (concerning interpersonal skills, i. e. behaviour at work and a whole range of skills) correspond to the level of responsibility held (such as the ability to co-operate and work as a part of a team, creativity, and the quest for quality). Full mastery of these skills can be acquired only in a working environment and therefore mainly on the job." (Teaching 1995, pp 14.)

This means that the involvement of the working environment is essential; the companies themselves must be engaged in all kinds of training. This fact was recognised in all transition societies, as is shown in the final report of group B of this year's and last year's Advisory Forum meeting.

At this point some other questions emerge. The first, and perhaps the most important is, " Is the economy in transition able to be deeply involved in the training process with regard to its limited economic and human resources? Another is, "Is the working environment structured adequately for training activities, especially looking towards the need for the professional socialisation of trainees?"

On both questions a definite answer is dangerous. The situation varies a great deal from State to State, from branch to branch and from company to company. In any case, the way to achieve full involvement of the working environment is different from country to country.

Based on the Slovenian experience, it may be said, that there is consensus about the fact that changes in the vocational education and training system should be developed gradually, with good preparation and without State pressure on the working environment. It is also necessary that continuity with the existing vocational education and training system be maintained and assured so that its advantages and good solutions are preserved until new ones are ready. For this reason, in Slovenia, it was necessary to define new, basic relationships, authorities, obligations and rights for the vocational education and training system — formal, legal relationships. We ensured the joint responsibility of social partners (employers, employees and the State) for implementing changes and creating new forms of vocational education and training. In Slovenia, to diminish the risk that limited resources might not permit the economy to ensure good, broad basic training for youngsters, it was indispensable, at this stage, to preserve the important role of the State's responsibility for vocational education and training.

In addition, small- and medium-sized enterprises (which are in better economic condition) are also fully engaged in basic vocational education and training. Under the responsibility of the Chamber of Commerce and the Craft Chamber and school centres, new forms of alternance training emerged.

Here, a very important question arises: " Which of the key qualifications can be obtained inside the existing educational network and which can be obtained only in the working environment?" This general question is somewhat rhetorical, for there is no rule; however, one thing is certain: for good qualifications, regardless of the level or the field of work, the full engagement of Social Partners is necessary, and no key qualification can be obtained in social isolation or without contact with real work.

This paper ends with the general question with which every "transitional society" is faced:

*How is it possible to develop an individual's key qualifications, especially in the social dimension, at the appropriate level, including adults and the unemployed, in the ambiguous context of the transition process, keeping in mind the economic difficulties that the transition process imposes on the working environment?*

There is no definite answer to this question. That is why cooperation, communication, and team work are needed and why the ability to learn is one of the most important key qualifications. We can change experiences, give advice, compare different solutions, but the flexibility of the system itself prevents us from making the mistake of coming up with decisive and uniform answers.

## References


1. C. Dubar: La socialisation. Construction des identites sociales et professionnellles. A. Colin. Paris 1995.
2. European Commission. Teaching and Learning. Towards the learning society. White paper on Education and Training. Brussels 1994
3. European Training Foundation. Advisory Forum Meeting Minutes. Torino. 1995.
4. J. Mursak: L'enjeu de la formation professionnelle dans le developpement post-socialiste: le cas de la Slovénie; in: Genese & dynamique des groupes professionnelles. PUF Lille 1994.
5. J. Thomas: Qualification professionnelle. Eyroles. Paris 1991.
6. Ministry of Education and Sport. White Paper on Education in the Republic of Slovenia. Ljubljana 1996.

# CHOOSING THE INTERNET APPROACH: "LEARNING BY DOING"

**Robert Blom**
**University of Wageningen, The Netherlands**

## A. Working with information technology

Information and Communication Technology (ICT) means far more than just boxes, cables and data. ICT is, within the university context, widely accepted as a tool for supporting key processes such as research, education and facility management. Most of the research staff uses ITC tools to calculate, to write, to do research-simulation activities and, of course, to collect information from databases. Last but not least, ITC tools are used to communicate via e-mail. Indeed, when Wageningen University students discovered that they could use Internet to communicate from their classrooms and, when possible, from their homes, they began to use the network even more frequently than staff members. But they did not use the technology only for studying. They experimented with audio files and image databases and they exchanged public-domain software and games from all over the world.

In 1994 Wageningen's network facilities were greatly extended by adding a graphic interface to allow access to the so-called WEB browsers — multi-media tools which allow for information exchange and include clickable text, graphics (and more recently) sound and (poor) video motion.

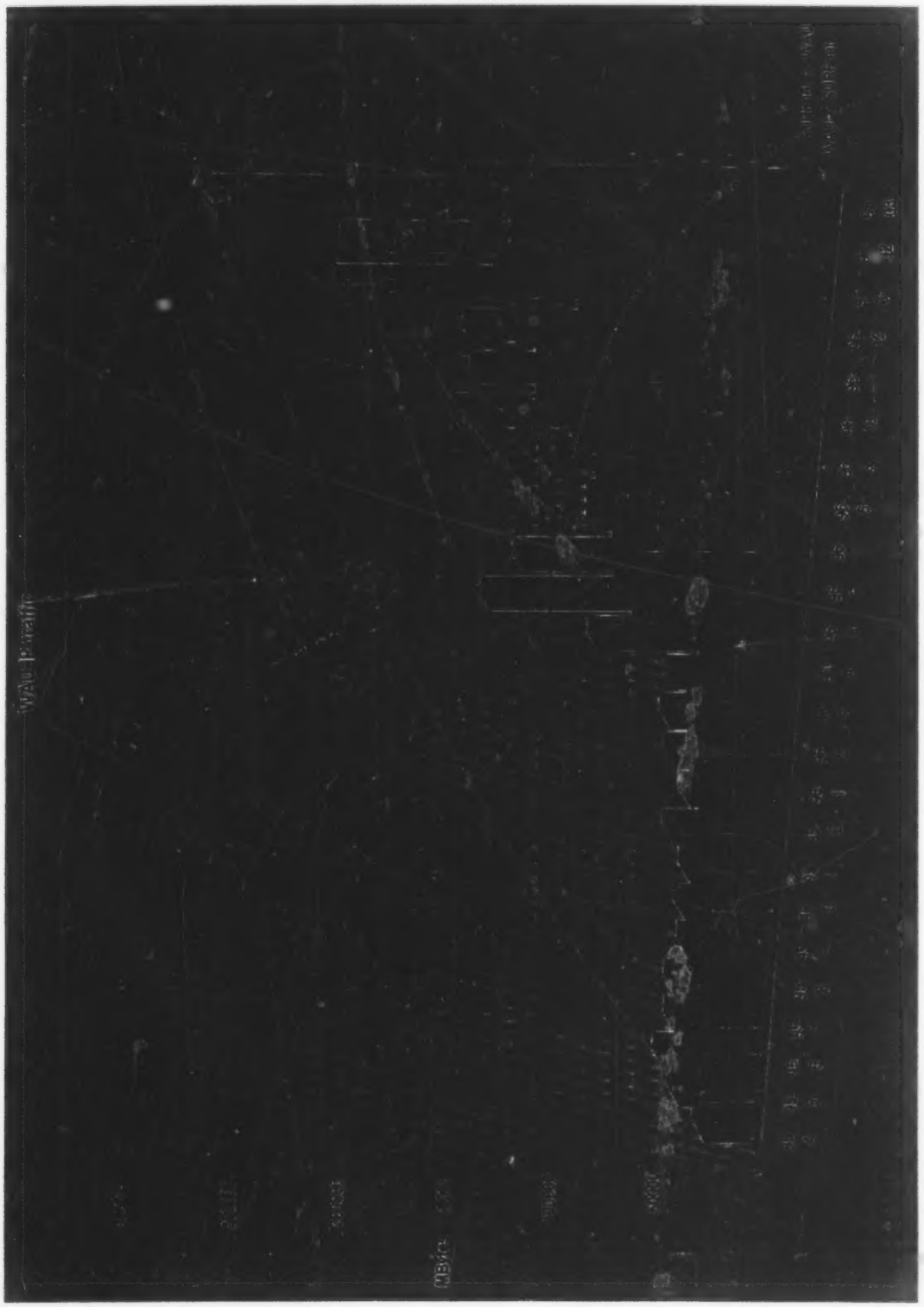
Probably even more important than the new features for users is the technological impact of the Internet. Access to all information sources became possible by using a standard communication protocol. The IP (Internet Protocol) became the world-wide standard for the new generation of application and operating software, replacing the hardware platforms from the 70s up to the early 90s which then led developments. Now, network software sets the rules of the game.

As you can see in Figure 1, the use of the network exploded after Internet capability came on line. "Internet" became a buzzword throughout the University and outside of the university Internet became big business. Every company wanted to be "on the net." Nobody knew what the effect on business would be, but everybody wanted to be involved and "on-line."

Internet is a new channel to an organisation's external relations. It (1) provides a vast amount of information; (2) expands communication facilities; and (3) offers new ways to present your services via multi-media and hyper links. Internet brings chaos, access to new markets, and new ways to package your information for new products. Notwithstanding all of this, what does Internet mean to educational institutions?

*Figure 1*

***The Growth of Internet Use at Wageningen University***



BEST COPY AVAILABLE

## B. Using ICT in an educational environment

Managing Internet in an educational environment is quite a challenging job. Everyone reads the newspapers. Everyone knows the buzzwords. Everyone knows stories about situations in which the expected facilities were not delivered in time. Indeed, the management of ICT may be summed up in the following one-line statement: "Being everything to everybody means being nothing to nobody". This translates into two basic management issues:

1. Define your position to your customers; and
2. Choose a model for approaching your customers.

In his Working Group III paper for this Workshop, the rapporteur, Søren Neilson stated that "a great challenge in Eastern as well as Western Europe was identified in the growing pressure towards individualisation: students are increasingly seen as customers; teachers are seen as suppliers of services to critical clients, and the content of learning is seen as a marketable product which can be "bought" in small pieces according to the wishes of the learner." This paper uses this "business-focused, customer-oriented" framework in which to discuss ITC as a tool for learning-by-doing in the vocational education and training context.

The ICT department within a educational environment is faced with a group of users (clients) who have different, specific needs for tools and information. The first question which must be asked is: "Are the users experienced in using Internet and multi-media tools?" If you compare the use of ICT within your organisation to that in other universities or schools, are you behind or beyond the average level of understanding? These questions are easy to ask but difficult to answer. However, knowing your position in this constantly changing information environment is important for your orientation toward information, for both the ICT department and the users within the institution.

In our experience, three stages in the relationship between users and ICT staff emerged: (1) market Introduction; (2) market development; and (3) customer support.

### *1. Stage #1: Market introduction*

During this stage, users are not aware of the potential use of ICT tools in their workplace and the vast communication possibilities within the institution, whether between colleagues or students. At this point, the market has many interesting products but there no "customers" — only "watchers". At this stage, the ICT staff should spend time doing experiments and discussing the results with the "customers." Students and scientific staff should ask the ICT department to demonstrate new developments and to do experiments within the institution to show them state-of-the-art applications. These pilot studies must be technically-orientated; but the results should be tested for technical, organisational and financial consequences.

An example of a result in this stage is the Hortonomy case which was, at that time, a new way to offer an electronic learning environment. The student had a complete "desk" on the screen which allowed (1) access to information; (2) communication with colleagues; and (3) a wordprocessor to create a paper. ( See Figure 4 )

### *2. Stage #2: Market development*



At this stage the institution has various user groups, each of which has a different attitude towards the use of ICT tools. During this stage the general management of the institution

must commit to ITC and, building on this commitment, should come up with a three-year plan, including ITC goals and a programme approach which defines a series of linked projects.

This is the most difficult stage of ICT development within an institution because, although this stage will lead to major changes in the use of ICT, at the beginning it is difficult to envision the desired results. Further, because of management's overall commitment of time, human resources, and a substantial amount of money (which is what is involved in this broad programme/project approach), many are critical about timely progress. Thus, those who are working on these projects are under a great deal of stress.

It is also important for management to take into account that there will be delays in meeting objectives and reaching milestones. During project activities, new technical tools will become available with new features. These will offer advantages and disadvantages and will take time to explore. Management should be very careful in defining expected results. When they start to use the new products, customers will have to accept the fact that a period of time will have to be used for testing. The key words in the market development phase are "marketing" and (creating a positive) "image" of the ICT department. The ICT department should present new packages and/or applications to its customers frequently and in such a way that the customers get a sense of ownership of the product. Customers should be proud of using the information service and, most importantly, the information that customers handle should make their work more worthwhile.

At Wageningen University, for developing ICT, we use a classic marketing approach. By examining the well-known four quadrants of marketing, shown below as Figure 2, you will be able to determine the phase you are in and what kind of action you should take.

***Figure 2***

***The Four-Quadrant Marketing Approach***

| | | **Market** *(customers)* | |
|---|---|---|---|
| | | **Existing** | **New** |
| **Product** *(information services)* | **Existing** | **Service** | **Customer-based programme** |
| | **New** | **Product-based programme** | **Experiments** |

BEST COPY AVAILABLE

If you have a new market (a group of customers/clients/users) and a new product, you are at the frontier of development. At this point, you should work with prototype techniques, design and conduct small pilot projects; however, do not spend too much money on these trial-and-error projects and remember the following strange advice. **"Do not try to manage these projects."** It sounds odd to say so, but this statement means that management is not able (and should not try) to force staff to define goals, timelines and traditional management instruments to control the process. The result of the experiments can surprise management and lead to new approaches to knowledge transfer or to knowledge presentation. The successful outcomes of the Delphi and Hortonomy cases are examples of these kinds of "creatively-managed" projects. Do not ask management for funding. Do, however, conduct many small experiments with a small group of experienced users. Once you have a product that works, you should proceed with the programme approach.

With your new information service or software product, go to your customers and start marketing the new product. Choose a programme approach, set some goals and pay a great deal of attention to the function and image of the product. Involve management. Ask for enough funding to ensure proper support and communication with your customers. If you have an existing product (such as an information service) and you are faced with a new group of customers, conduct a survey to determine the clients' main activities and problems.

### 3. *Stage #3: Customer support*

Most users who use information and communication tools want help if anything goes wrong or new features are available. This stage is the time when service is critical. The ICT staff on the "helpdesk" must be trained to both trouble-shoot and to provide customer-support services. They must be friendly on the phone, willing to hear the whole story and be able to analyse the question carefully. They must also know that, most of the time, the customer's question is not directly linked to the problem.

This stage is the most service-oriented stage. For existing markets and existing products you should pay most attention to client support. Be careful of how your helpdesk is perceived by customers. Pay attention to customer complaints because customers often start complaining to general management, they complain to you — and general management complains to you. If you do not have the right answer, find it. If you are not helpful, you and your product are finished. If you do have the correct answer, communicate with the persons or groups doing the complaining.

Ask them what they are doing and what they will do within the next year, so you can start working on new and improved services. And than you are dealing with the next issue, and the whole process starts all over again with, indeed, a new product.

## C. What is the push of ICT in relation to requirements for problem solving?

ICT makes no specific requirement for problem solving because problem solving pervades ICT. Once you know the basics, you are in a realm which requires you to solve one problem after another, to think of "if-then" relationships. ICT is a medium of problem solving and discovery. The entire spectrum of ICT is available for an enormous number of processes for handling information. So ICT improves the data-handling for problem solving as well. To imagine how problem solving is supported by ICT tools, just think of: *"Information at your desk."* You have:

- access to a plethora of information sources (via Netscape or Explorer);
- search engines and they are on your desk (like Yahoo or Alta Vista);
- "groupware for (interdisciplinary) teamwork";
- the ability to handle complex issues by working in groups and sharing working-group applications, data and options (see for example Hortonomy);
- "simulation software"; and
- software which specifically fosters learning how to make decisions: options and development paths: causes and effects (example: Simcity);

## D. What are the new orientations with regard to learning in vocational education and training?

Information and communication technology is having a profound influence on the educational environment. The economic situation is driving management to more efficient and effective uses of resources (staff and facilities). However, when introducing ICT into the educational context, it is necessary to take time for experimentation and it is most important to develop a structural approach. Indeed, with this new mode of communication, there are even opportunities for inter-organisational projects and relationships.

In the Netherlands, in the agricultural sector vocational training institutions started to cooperate with polytechnics and universities in two areas: (1) content; and (2) facilities. There are huge differences between the levels, but participants are keenly interested in learning from each other.

Cooperation between vocational training institutions and business partners starts with commitment on content, course programmes and on-the-job training possibilities. Goals involve the (re)training of the business-partner's staff. This starts with a programme approach to curriculum development from the management perspective of both the school and the business unit. They define the goals and the content. There is also a great need for ICT experimentation and development in this area.

The challenge is to create working groups of teachers, pedagogues and ICT staff. Aside from all the programme and goal discussions, it is vital to have "best-practice" examples as a basis for shaping your own approach. Here are three case stories from Wageningen University: Acquarius, Delphi and Hortonomy.

## *1. Aquarius*

The aim of the Aquarius project is to develop a European Electronic Training and Information Service in the Aquaculture Sector. This service will integrate existing and emerging network technologies which facilitate communication, information exchange and collaborative work. The target groups are academic research centres and small- and medium-size businesses (SME's). A consortium, in which the University of Gent (UK, Trondheim, Bergen (Norway) and Wageningen (The Netherlands) are participating, is building and validating a "demonstrator" which would provide a participating small business with information.

The objectives of the project are to get better results at the farmer level. By comparing results and carrying out applied research on the fish farms and by supporting farmers with practical advice in field management, nutrients and health, it is expected that the quality of fish and fish farm management will improve on the participating farms.

A survey has been conducted and the questionnaries analysed. The analysis showed that the user-friendliness of an information service was of vital importance to all of the user groups and that, at present, the lack of appropriate computer equipment at the academic sites and the low-level of computer knowledge of the industrial actors, were found to be the limiting factors for the use of ICT as an information source.

Having access to databases of literature, institutes, addresses, conferences and fish diseases were considered high priority by all farmer respondents. The aquaculture industry was particularly interested in non-static information, such as fish prices, market information, and legislation. Further, organisations' taking a role in promoting new ways to distribute information and to communicate with their members seems to be crucial for ICT success in the sector.

Aquarius is addressing the challenge of developing and transferring knowledge in the rapidly growing fish-farming business. Fish farming is expanding in rural Europe and is expected to grow. However, due to local traditions, scientific research and education, it has received little attention. Indeed, there is a lack of educational capacity at all levels. Furthermore, fish farmers are expressing interest in having more opportunity to exchange their views and problems with fellow farmers and with researchers in this sector. The use of telematic tools is providing an opportunity to integrate new learning methods and aquacultural education and research.

The main focus of Wageningen University's Training and Information Service is to integrate high-speed, Internet-based academic networks with technology platforms accessible for SME's (ISDN, CATV and PSTN). Aquarius will be validated between three academic sites involving 200 PhD and MsC students, the staff and thirty SME sites involving fifty persons. In the demonstration phase Aquarius will be extended to other academic and SME sites.

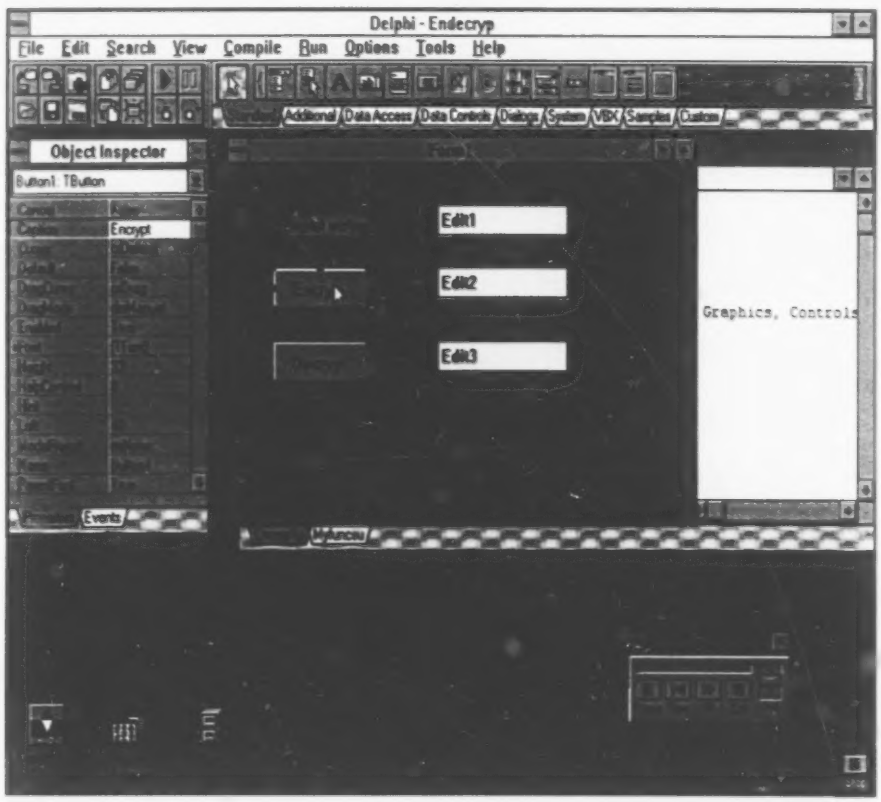
## *2. Delphi*

Over the last three years, the Department of Computer Science at Wageningen Agricultural University has been experimenting with a computer-assisted course based on a database with screen recordings (soundfiles). The course consists of both a computer-based component and a plenary-session component. E-mail and a newsgroup support the communication between students and the teacher during the computer-based part of the course.

The interactive part of the course was first developed through Windows help-files. Now it has been transformed to the Netscape browser, so that larger groups can follow the course via Internet. The course explains concepts which can be visited in an advised sequence. The student can find his/her own more-or-less advanced way through the subject-matter by using basic help-functionality as index-search and related links. Concepts can be recorded on screen, and then these screen recordings can be discussed. Lotus Screencam was used to create the screen recordings (soundfiles). The soundfiles are connected to introductory text; an example of the discussed concept is provided; a print-out of the text of the screen recordings is given; and there is a way to check student progress on the subject through questions and answers.

*Figure 3*

*A computer screen displaying a concept which has been accessed by clicking on a button.*




In developing the Delphi system described above, it was obviously to our advantage to use a well-known user interface. The teacher is not able to keep track of student progress during the course unless the student seeks contact. The student may question a certain concept by e-mail or visit the teacher face-to-face. An overview of overall progress may be achieved

BEST COPY AVAILABLE

during plenary-session discussions. A basic problem of this approach is maintaining the course content. Adding new concepts or modifying the advised sequence must be done by modifying the source and regenerating the help files. The course could be organised in a more flexible way using modern Internet techniques. A database equipped with a web interface for students will improve communication immeasurably. The teacher would then complete the database using either local software or a web interface to build or maintain the course.

As of this writing, the software development team is developing a universal course database supplemented with a web interface for students. This web interface will support students' finding their way through the course material by using pre-defined profiles. Students may choose their own starting points, complexity and working tempo. Based on previous modules, the student will get advice on the next modules to be studied. Besides these pre-defined profiles, an on-line profile will be built which will provide information on the use of the course system itself and thus extend knowledge of the system. Tracing students gives both students and teacher much necessary information for a general overview of student progress and leads to an evaluation of the course to pinpoint areas needing further improvement.

### 3. *Hortonomy*

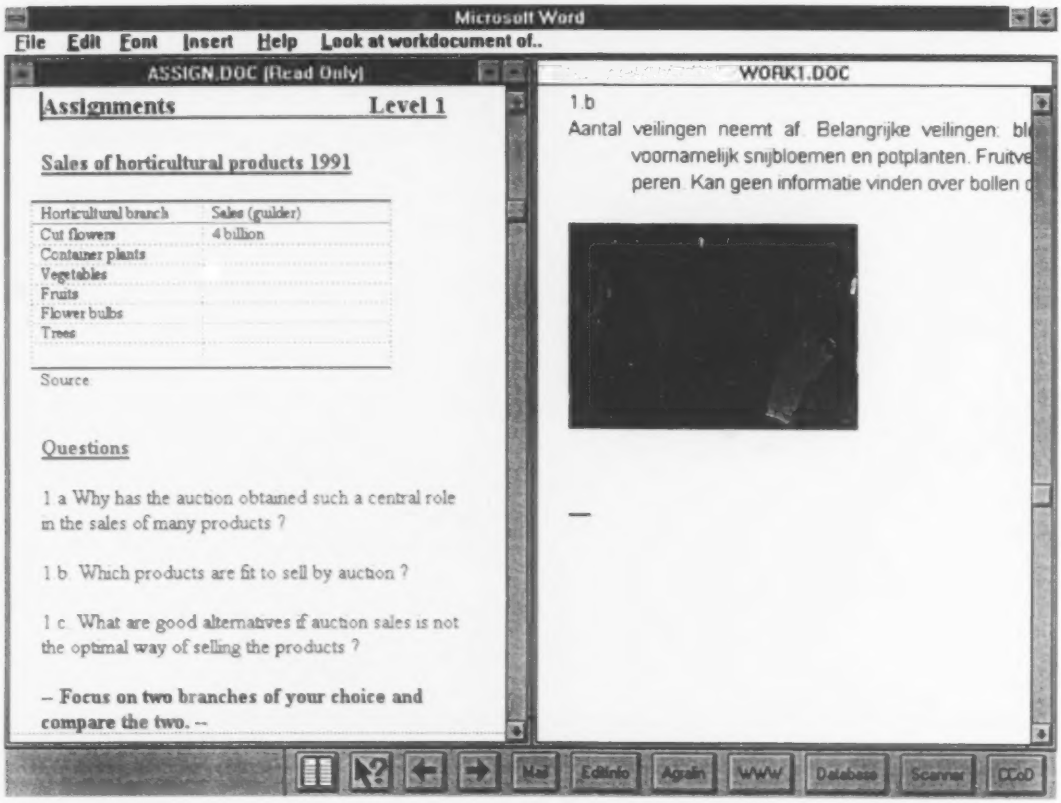
In 1993 the department of Horticulture started a pilot project to integrate the material of eight courses to provide students with knowledge and awareness in various areas of study, such as "the greenhouse" and "open-field cultivation." Just to train students to cope with the overall issues and

problems encountered in the horticultural production chain, a programme was developed to serve as a computer-based information search-and-retrieval shell. In addition, the course involves a number of voluntary and scheduled meetings between students and staff. A student works on the problem both individually and on a team. In the team, the individually acquired knowledge is integrated with the knowledge brought by the other members of the team. Each team shares a document to work on, in which each member must contribute. Individual and team progress may be monitored by the teacher and the team members themselves.

The document resides in the search and retrieval shell. The shell provides WEB access, local library access, word-processing functions and exchange of information and messages by e-mail. Using this standard, word-processing tool, the working environment is easily accepted by users. At the plenary sessions the teachers facilitate the students' information gathering activities, guide them where to (actually) go (virtual) and initiate discussions on the usefulness of the information collected.

*Figure 4*

*A typical screen display from the Hortonomy Programme*


Microsoft Word
File Edit Font Insert Help Look at workdocument of..
ASSIGN.DOC [Read Only]
Assignments Level 1
Sales of horticultural products 1991
Horticultural branch
Sales (guilder)
Cut flowers
4 billion
Container plants
Vegetables
Fruits
Flower bulbs
Trees
Source
Questions
1 a Why has the auction obtained such a central role in the sales of many products ?
1 b Which products are fit to sell by auction ?
1 c What are good alternatives if auction sales is not the optimal way of selling the products ?
-- Focus on two branches of your choice and compare the two. --
WORK1.DOC
1.b
Aantal veilingen neemt af. Belangrijke veilingen: bl
voornamelijk snijbloemen en potplanten. Fruitve
peren. Kan geen informatie vinden over bollen
Mail
Editinfo
Again
WWW
Database
Scanner
CCoD

## E. Conclusion

Management of ICT can indeed create a "knowledge infrastructure" in which universities, polytechnics and vocational education and training schools have access to the same information services. An institution deciding to move in the ICT direction must choose a strategic approach. Further, using a mix-market approach will be successful only if the development stage of your customers (the market) is clearly defined at the outset. It is also important to select the right target groups within your learning organisation. One of the most important target groups is the teachers. Teachers are key to changing basic organisational functions and key to transferring knowledge to students. Do experiments and learn from them. Watch other institutions carefully and benefit from their successes and failures. However, most importantly, choose the Internet approach and "Learn by doing".

BEST COPY AVAILABLE

## References


1. R. J. M. Hartog: *Computer assisted learning: from process contro paradigm to information resource paradigm* in: Journal of Microcomputer Applications . 12, pp. 15-31. 1989
2. P. Linde: *Hortonomy: On-line Programme for University-level Education* in: The Contours of Multimedia, edited by N.J. Jankowski, and J.Hanssen, p. 131-140. 1996.
3. H. J. Scholten-Kroeselman *Three approaches to computer based learning* in Agrarian Prospects, 3-4 September 1996, Prague. (in preparation.)

# PROBLEM-SOLVING TOOLS IN A LEARNING ORGANISATION

**Paul Olry**
**Ministry of National Education, France**

Today, companies seeking to incorporate the qualities of flexibility and reactivity into their working structures require *non-rigid* qualifications from their workforce. At the heart of these "new qualifications" lies the workers' ability to solve those new problems which emerge from complex production systems. Our hypothesis is that problem solving is conducive to learning. Therefore, it is necessary to work with a company to ensure that it is organised in such a way as to make the most of its workers problem-solving and other newly-acquired skills. With a view towards creating a true "learning organisation" (or "learning company") beyond the actual training of individuals, there is a need to focus on coordination with company managers and supervisors.

To this end, the French Ministry of Education set up a programme designed to help companies develop and adapt qualifications. In this programme technical-school trainers and consultants propose training courses which are: (1) firmly rooted in the employee's real work situation; and (2) sanctioned by qualifications. This paper illustrates the changes in approach inherent in this scheme and describes how it works in some industrial companies with which we have had experience.

A company facing and implementing industrial change must also deal with sensitive points of organisation and industrial performance. Further, in many cases, this process calls for a change of perspective on the qualification question. Let us examine this issue from the problem-solving point of view, focusing on three points, as follows:

1. Employees in the workplace solve problems every day. Thus, the worker, through problem solving, "expresses" his or her qualification in carrying out complex tasks, alone or as part of a team;
2. Problem solving involves areas of learning which go beyond the strict limits of academic knowledge; and
3. Problem solving is the implementation or application of individual or collective knowledge and abilities.

Each of the above three points is elaborated below using examples taken from leading companies, including: Péchiney, French National Bank, Carnaud Metal Box and EDF-GDF (The French Electricity and Gas Board).

***Employees in the workplace solve problems every day. Thus, the worker, through problem solving, "expresses" his or her qualification in carrying out complex tasks, alone or as part of a team.***

## A. Problem background

Once workers have acquired practical knowledge of production-site operations, their actual work presents a series of problems which require solution. Thus, if workers are to understand the true scope of their work they must acquire more knowledge about such technical areas as: (1) processes; (2) production facilities; (3) products; (4) procedures and organisation; and (5) change management: energy, material, communication. All of these elements are activated as secondary-level knowledge objectives for the worksite: costs, quality, safety.

In other words, true work activity comprises a complex series of processes. An accident or an unexpected event in the manufacturing process creates a series of problems which not only challenge technique, management and organisation but also challenge the ability of those concerned to solve them. These problems may involve one or several levels of responsibility within the company (management staff, technical engineers, production operators, and/or research department personnel).

## B. Understanding the scope of the problem

Sometimes, the problems encountered are symptomatic of a need to redefine individual roles and tasks. We came across this situation on several occasions in dealing with our major industrial clients, particularly in situations in which productivity or quality problems were jeopardising the survival of the site. Our response was to construct, together, a global conceptual framework of the occupations or skills involved. We abandoned the concept of "frontiers" between occupations and replaced it with the notion of "contributions" to the exercise of a particular skill. Thus, within this framework several "jobs" contribute to achieving established skill goals.

For example, in 1986, the Gardanne aluminium factory in the South of France was threatened with closure. Péchiney management gave the site manager one year in which to improve results. To this end, an industrial project was to be carried out which would involve a change in production. The factory was to diversify — from manufacturing a single product (alumina) to producing a score of technical aluminas. With the agreement of the workforce, it was decided that the skills used in the plant would be redefined and an extensive training programme would be launched with this in mind. This is how Y. Ocello, the plant manager, summed up the situation in 1994:

***We faced two challenges: (1) to diversify to ensure our continued existence through training aimed at redefining the individual in terms of SKILL rather than WORK STATION and (2) to improve competitiveness for survival based on a career development system which facilitated our passage from competence to competitiveness."***

As in this example, employees are frequently offered training in the subject-matter area which is causing the problem. Training is one of several means used to treat this problem. To get to its root, however, it is often a good idea to broaden the scope of the analysis to encompass all components.

## 1. *A tool: the "groupe métier" or "skill group"*

When major technological or organisational change occurs, the productive process must be taken apart and analysed so that the causes and areas of non-productivity may be identified. The causes may include obsolescence or qualifications which are not adaptable to the situation. Reviewing the specific competency required often proves beneficial. To obtain this information, trainers from the State education system hold a series of meetings with appropriate company representatives. In the course of these meetings, trainers and company personnel draft a new and shared vision of company activity. Having this vision is of key importance, but to get a clear picture of what workers actually do (as distinct from mere records of their positions in the organisation) company personnel also must know under what conditions workers perform tasks, as follows:

1. Is the task permanent or temporary?
2. How important is the task in relation to expected results?
3. How difficult is the task?
4. Is the task carried out individually or with colleagues?

Working in this way to describe tasks, the trainers draw up a list of skills to be learned and the knowledge required for each competency to be put to use. The advantages of this "skill group" lie in the fact that it:

- makes it possible to get the members of the group to focus on the problem and to share what they know about the practices involved in the work under review;
- gives employees who rarely have the opportunity to work together so intensively and rigorously, a chance to produce a collective product;
- opens the way for practitioners and superiors to compare perceptions about a particular skill; and
- prompts self-critical examination, encourages people to fight against blind allegiance to the status quo and helps them accept change.

***Problem solving involves areas of learning which go beyond the strict limits of academic knowledge***

In present-day production systems, it is essential that employees have the ability to solve problems. Problem solving is a task which goes beyond the mere application of techniques. In other words, in today's workplace, it is no longer simply enough to rely on the knowledge workers acquired at school or even on the skills acquired formerly at work. The problem is that the workforce needs to be able to process information and make choices in changing circumstances.

This implies a change in perspective with regard to (what may be called) the "lack" metaphor. It used to be taken for granted that, once basic knowledge had been acquired, there was no longer a "lack" of knowledge or "lack" of competency. There was no longer a "gap" to be filled.

*Problem-solving tools in a learning organisation*

| | |
|---|---|
| **A framework** | The skill or trade, the activities carried out, the problem areas and their estimated contribution to global performance are described in a *reference system.* |
| **A unit of analysis** | The *professional situation* - allows for the definition of the competencies used in a given context. |
| **A unit of learning and validation** | The *activity sequence* representing the responsibility devolving upon a particular job. |
| **A single training site: the company** | The employees are trained *in the course of the manufacturing process* with the support of training resources: hierarchy, trainers, peers, pedagogical resource centre. |
| **A unit of measurement: industrial results** | incorporating training in the management of industrial performance serving as a vector for qualification and testifying to adaptability skills |

*The different stages in analysing competencies*

| STAGE | PROCESS |
|---|---|
| **Prepatory work** | * Analysing the documents<br>* Informing the interested parties<br>* Holding Preliminary interviews<br>* Forming the groups |
| **Analysis of activities** | * Identifying activities<br>* Breaking the activity down into tasks<br>* Analysing tasks<br>* Identifying knowledge |
| **Elaboration of reference system of competencies** | * Pinpointing know-how<br>* Ordering of abilities<br>* Identifying crossover in abilities/activities<br>* Identifying crossover in abilities/knowledge |

It was thought that each real situation — each expected level of result — called for the continuous, progressive improvement of competencies. However, in the new scheme of things, the need to acquire new knowledge is debatable. In contrast, however, there is a need to organise knowledge "differently" — to produce the new problem-solving skill. It is in this sense that the professional situation becomes a learning opportunity.

**a) Towards the "learning organisation"/"learning company"**

This brings us to two questions:

1. how to organise this new learning mode within a company; and
2. how to get *problem solving* recognised within the wider context of academic training.

This is what is meant by making a company a "learning organisation" and rendering its administration more effective. In concrete terms, this is effected by developing tools which are geared to the practical difficulties involved in work activities and performance.

This concept, shared by trainers from a company and the State education system, proves highly effective in solving practical problems which occur when training is conducted. Several such problems are evident in the following case involving Carnaud Metal Box, a manufacturer of food-preservation tins.

In 1993, this company began its organisational change process. In each factory, the production lines were to be managed by a product team. Thus, the company's workforce needed different abilities. They thus asked us to provide the training. The criteria were:

* availability of personnel;
* training was to be homogenous at all sites;
* training must be acquired in the work situation;
* the professional skills must be sanctioned by a diploma; and
* the evaluation must take place during a real work activity

A number of approaches were proposed to the company. The company thus:

* developed the skill groups needed by the new jobs;
* trained company trainers,
* trained hierarchical "companions"; and
* made provisions for on-the-job evaluations of the new competencies.

These innovations, introduced at the same time, made change easier. Today, each level of responsibility has been redefined and everyone shares the knowledge of the job with others. In each team, all members have qualified for a technical diploma — acquired "on-the-job". As in this example, current trends in productivity and training-programme quality are reflected in the growing integration of training at the worksite and in administrative departments.

## 2. *A tool: professional learning situations*

Today, trainers from the State education system offer employees in training an approach which is centred on the daily professional situations they encounter. Training is thus devised as functions involved in specific segments of the work. Training is thus turned upside down. Instead of deciding at the outset what employees need to know, trainers now adopt an *inductive approach* to determine the knowledge and know-how required by that job situation.

***Problem solving or continuing improvement? The case of learning organisations***

| | |
|---|---|
| **Productivity objectives** | * Quick reaction and response to events<br>* Production flexibility |
| **A postulate** | * a global conception of the trade or skill |
| **Training principles** | * An objective of higher qualification<br>* training programme determined according to the industrial imperative |
| **Variable temporal horizons** | * Basic skills and observations (short term)<br>* Analyses (medium term)<br>* Production of expertise (long term) |
| **For a dual purpose** | * A validated trade or skill qualification, including individual learning capacity<br>* Global productivity results |
| An equation:<br>**production + flux - competencies = competitiveness** | |

Working at their own speed of assimilation, employees receive training not only in what they need to know but also, most importantly, in how to deal with the many aspects of a complex situation. Before the training programme takes place, an evaluation of the work situation is carried out which helps identify the competencies and the professional knowledge to be acquired. The professional learning situation includes a series of tasks of increasing complexity; these are detailed in training-support materials.

Just as special instruments are used to monitor and control the quality of products, so training is a means to control the efficiency of non-technical processes. Training facilitates the task of setting industrial targets because qualified personnel thus ensure harmony with the established objectives.

***Problem-solving is the implementation or application of individual or collective knowledge and abilities.***

a) **Multi-function work activity calls for multi-faceted competencies**

It is well known that training can be provided to develop competence in real work situations. For example, the supervision of a continuous-process production line demands specific personal and professional abilities to cope with:

* *Production incidents.* It is essential for learners to organise or at least participate in a group discussion on a particular aspect of the problem under consideration. For example, the problem of "the failure of a single sensor" requires solution of "finding another process loop." Failure of a single sensor means finding another process loop.
* *The hazards of the production process* which require a marked ability to communicate. In other words, it is of vital importance for employees to express themselves clearly and precisely on the basis of commonly-understood reasoning and terminology.

The purpose in learning how to solve problems is therefore to ensure the efficacy of technical competencies in the human and organisational system of the worksite or department.

Like the production system itself, the training system requires employees to organise and anticipate. Ways to merge one's personal direction with one's professional situation and to get qualified in one's professional competencies (with a national diploma, for example) still need mechanisms established to ensure the success of the training programme itself.

b) **The required partnership between industry and the State education system in France**

Consultants from the education authorities and their training counterparts within companies are working towards ensuring that competencies accrued on-the-job take on wider validity. The beneficial work of collaboration is proceeding along the following lines:

* *Education authorities:* The challenging task of education authorities is to match the skills of a company with the relevant diploma. State education trainers systematically propose this to companies with which they are working in the form of a *competency map*.
* *In-company trainees:* The priority for in-house learners is to receive diplomas which correspond to on-the-job skills, even if this means redrafting or adapting existing diplomas.

In addition to the structures already in place (i.e. the consultative professional commissions) it is of inestimable advantage for the State system to receive requests directly from companies. We may cite here the example of the metallurgy sector in which separate diplomas covering more than fifty specialised fields (smelter, rolling mill operator, pointer) were reduced to a single, cross-disciplinary diploma. Before this could be achieved, however, professionals in the industry had to become aware of the fact that their trade had changed — from mastering a physico-chemical process to operating a technological system.

## 3. *A tool: in-company training centres*

With a view to responding as appropriately as possible to company requirements ("rooting training in work activity") and the needs of personnel ("training must take place during working hours; it must not focus exclusively on my activities, but must allow me to advance"), trainers and counsellors build up what is called *integrated training systems*. In fact, these systems comprise a series of training resources located in the company itself—at the worksite and in the administrative division. An in-company training resource centre should include:

- skill reference systems;
- technical descriptions of machines, equipment, procedures;
- pedagogical contents and training supports
- in-house trainers and technical experts; and
- state education trainers who are available directly or through remote-access modes.

There is organised access to this resource centre. When a problem arises in the execution of a given job, an investigation is launched by the person concerned and those to whom he or she is responsible. First, technical and organisational solutions are reviewed. Then, if it emerges that the problem springs from the employee's insufficient qualification level, a management review is conducted involving his or her immediate superior, the trainer and the manager. A particular amount of training is proposed to ensure the required competency. A pedagogical contract is then concluded between:

- the employee (who agrees to follow the training programme in its entirety);
- the trainer (who undertakes to respect the duration and the proposed contents); and
- the management (which must ensure that the employee makes full use of this acquired competency in the work situation).

This process is designed to maintain competency and strengthen the training system in three respects:

1. using the competencies acquired through training, i.e. ensuring the transfer of competencies from the learning to the work situation;
2. compiling situations and related activities so that an open-ended database of necessary competencies can be built;
3. using common and identical tools to evaluate, for each job, the effects (efficiency, impact) of the training programme and also to increase its efficiency.

## C. Conclusion

In conclusion, three more general aspects of training must be mentioned:

1. Training brings to light issues which are not all confined to training itself. Training contributes to the development or survival of the company, to changes in modes of organisation, to the assessment of individual and collective competencies and to problem anticipation.

2. The training conducted in companies forms a complex whole, made up of traditional solutions and innovative approaches. Trainers are thus confronted with complex systems in which several training modes operate at a given moment. These systems are geared to an increasing quest for productivity.

3. Our role, as public-service training specialists, is to act as forces for change. It must be said that we use all of our senses in the process of change:

   - With one eye, we use a magnifying glass to analyse work stations; we are therefore entomologists;
   - With the other eye, we scan the horizon for future competencies using a telescope; we are therefore astronomers; and
   - We have two big ears to listen out for the problems around us!

# THE IMPLICATIONS OF ECOLOGICAL AWARENESS FOR PROBLEM SOLVING[13]

**Hilde Biehler-Baudisch**
**Federal Institute for Vocational Training, Germany**

## A. Environmental awareness or environmental correctness?

"The importance of education in the development of environmental awareness cannot be overstated and should be an integral element in school curricula from primary level onwards" is stated in the European Community programme "Towards Sustainability".[14] When emphasising the importance of education the meaning of "environmental awareness" must be examined.

Demographic surveys conducted in 1991 revealed that 61% of German households consider themselves to be environmentally aware and 34% consider themselves to be "environmentally-active".[15] The survey illustrates the discrepancy between environmental awareness and making an active contribution to solving environmental problems. A large-scale study surveyed companies about incorporating environmental information into vocational training. Results revealed considerable environmental awareness among staff and managers but little inclination for active environmental protection at the workplace.[16] Moreover, research in environmental education indicates that environmental awareness does not necessarily mean environmentally correct conduct.[17]

Attempts to raise awareness often use information dealing with health risks and environmental problems, data about air pollution, water contamination, land degradation, proliferation of natural disasters, lists of species. The knowledge offered is "faceless and without reference to a particular place, an abstraction which shows a considerable deficit. This knowledge gives us data, but no context; it shows diagrams, but no actors; it makes calculations, but no ethics; it seeks stability, but not beauty.[18] This knowledge tends to create insecurity and helplessness in the face of the dangers to our world; it paralyses us rather than encouraging us to take action.

To adopt a proactive approach to environmental problems, awareness *and* personal competence for problem solving are required. This condition is also stated in the Eco-Management Audit Scheme

---

13 In spite of their different meanings the terms "ecological" and "environmental" are often used as synonyms. Here "environmental" seems more appropriate as it is also being established in educational terminology.

14 Official Journal of the European Communities No C 138, 17.5.1993: *"Towards Sustainability". A European Community programme of policy and action in relation to the environment and sustainable development*, p. 72

15 Meffert, H.; Kirchgeorg, M.: *Marktorientiertes Umweltmanagement*. Stuttgart 1993, p. 89

16 Schluchter, W.: *Umweltschutz in Metallberufen*. Berichte zur beruflichen Bildung, Heft 155, Berlin 1992

17 See: Langeheine, R.; Lehmann, J.: *Stand der empirischen Umweltbewußtseinsforschung*. In: Günther, R.; Winter, G. (ed.): *Umweltbewußtsein und persönliches Handeln*. Weinheim u. Basel, 1986, p. 48 f.

18 Sachs, W. (ed.): *Der Planet als Patient; über die Widersprüche globaler Umweltpolitik*. Berlin 1994

(EMAS) regulation[19] which both concerns environmental management and refers to human-resource management. Environmental management systems are required to: (1) ensure awareness of personnel at all levels; (2) identify training needs; and (3) provide appropriate training for all personnel whose work may have a significant effect upon the environment. These terms show clearly that a suitably qualified workforce is considered to be one of the main prerequisites for improving a company's environmental performance.

## B. Environmental correctness calls for competence

The ability to demonstrate environmental correctness at the workplace calls for interpersonal, social and occupational competence. In addition to technical and other occupation-related skills, it presupposes the ability to deal with inconsistencies between occupational activity and its broader economic and social context. This means that personnel must be aware of environmental problems not in isolation but as connected to economic and social processes.

It must be stated that an economy will only be successful in the medium term if it has learned in time to produce, distribute and consume in a manner which does as much justice as possible to the environment. Entrepreneurs and managers are also recognising the direction in which a successful company must steer. An environmental officer of a medium-size enterprise told me in an interview: "If we do not learn *today* to produce in a manner which does justice to the environment we will not produce any more after the year 2000." To speak in more general terms: Today's environmental problems are likely to be the economic and social problems of the future. We must learn to give them appropriate attention today to prevent further damage to the economy by the material and non-material aspects of environmental damage.[20]

Further, ignoring the environment can lead to large costs for enterprises such as:

- costs of emergency action;
- loss of production;
- costs for settling claims;
- medical costs;
- motivation costs; and
- costs incurred by damage to corporate image.

On the other hand, the greening of industry has a considerable effect upon the labour market. In a present trend scenario, which assumes that environmental policy will continue in its present direction, researchers concluded that, in Germany, there will be at least 1.1 million environment-related jobs by the turn of the millennium.[21]

---

19 Council Regulation No 1836/93 allowing voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme (EMAS regulation). In: Official Journal of the European Communities No L 168, 10.07.1993, p 1 - 25.

20 Umweltbundesamt (ed.): *Die Nutzen des Umweltschutzes (a synthesis of the findings of the national research programme)*. BERICHTE 12/91, Berlin 1991

21 Umweltbundesamt (ed.): *Beschäftigungswirkungen des Umweltschutzes. Stand und Perspektiven. Syntheseberich*t. BERICHTE 5/93, Berlin 1993

## C. Sustainable development — a new principle

Environmental matters should not be discussed only according to economic cost-benefit ratios, however. A global perspective must be adopted. The 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro adopted the "Rio Declaration" and "Agenda 21" which are aimed at achieving sustainable patterns of development world-wide. Sustainability was discussed as the new principle for environmental *and* economic policy-making. It was underlined that our current patterns of development, production, consumption and behaviour are not compatible with sustainable development. They deplete or destroy natural resources and pollute the environment. The two main problems may be summed up in very simple terms: *We are taking out too much and discharging too much.*

*"Taking out too much" means the exploitation of natural resources beyond their regenerative capacities (e. g. diminishing the rain forests) and the high consumption of non-renewable resources (e.g. oil, coal, gas). "Discharging too much" means releasing emissions and discharges beyond the rehabilitative capacity of ecological systems (e.g. the greenhouse effect).*

If generations to come are to enjoy the same quality of life as we do now, sustainable development calls for a change in consumption and production patterns. An ecologically sound mode of production must incorporate the following features:

- development of closed-material cycles and use of regenerative resources and energies — product recycling, wherever possible;
- reduction of inputs through more efficient use of materials and energy;
- reduced material fluxes thanks to products built to last, which are easy to repair and can be modified as advances are made;
- products and industrial residues which lend themselves to safe disposal;
- technologies which can sustain errors without disastrous human and environmental effects;
- pollution avoidance.[22]

Industrial adaptation to these objectives is likely to foster major changes in corporate priorities. The emphasis would shift to production utilising fewer materials and less energy instead of extensive growth. Environmental issues would become relevant criteria for entrepreneurial decisions.

There is no doubt that a company's environmental policy, environmental programme and objectives are only as valuable as the readiness of personnel to comply with them. Therefore, environmental protection should not be an issue for the chief executive officer but should be soundly anchored at all corporate levels. How do companies meet this challenge?

## D. Training strategies in companies

Lately, environmental training in companies has gained considerable



22 Source: Umweltbundesamt (ed.): *Environmental Protection — an Economic Asset*. Berlin 1994, p 92 f.

importance due to the Eco-Management and Audit Scheme (EMAS) regulation. The EMAS regulation:

1. underscores that it is industry's responsibility to manage the environmental impact of its activities; and

   states that this responsibility calls for companies to adopt an environmental policy which (in addition to providing for compliance to all relevant regulatory requirements regarding the environment) must include commitments aimed at the reasonable, *continuous* improvement of environmental performance.

The objective of the Eco-Management and Audit Scheme is to promote these improvements by:

- "the establishment and implementation of environmental policies, programmes and management systems by companies, in relation to their sites;
- the systematic, objective and periodic evaluation of the performance of such elements; and
- the provision of information of environmental performance to the public.[23]

It has already been stated that such objectives require appropriate training.

for personnel at all levels. However, to learn about the way such training is done within companies is sometimes difficult, because training strategies are often considered to be part of the company know-how and, thus, are not reported in questionnaires. However, company environmental statements prepared for the Audit Scheme and designed for the public do discuss this issue. Indeed, an analysis of the environmental statements of companies which are participating in the Environmental Audit Scheme speak directly to environmental training in real-life, corporate activities. Analysing these statements shows that the most interesting and innovative approaches to human-resource management are not those from big companies but from medium-size enterprises.[24]

The environmental statements made by participating companies confirm that although certain environment-related jobs (e.g. the environmental protection officer) call for individual training, the best way to promote active responsibility for the environment is through communicative learning processes. In-company environmental working groups are frameworks for learning as well as for problem solving. When personnel are involved in operating procedures and in preparing and implementing a plan of corrective action connected with the environmental audit, there is a direct impact on a company's environmental performance.

Well-organised work in a group can profit from the competence and creative potential of personnel to improve the environmental performance of the enterprise and, at the same time, "qualify" the members of the group through a participatory learning process[25]. According to the

---

23 Council Regulation No 1836/93 allowing voluntary participation by companies in the industrial sector in a Community eco-management and audit scheme (EMAS regulation). In: Official Journal of the European Communities No L 168, 10.07.1993

24 See: Bichler-Baudisch, H.: *Exemplarische Auswertung von Umwelterklärungen zum Stellenwert von Bildungsaspekten*. In: Bundesinstitut für Berufsbildung (ed.): Umweltschutz, Arbeitssicherheit und Gesundheitsschutz. Berlin 1996, p. 45-48

25 See: Dehnbostel, P.: *Didaktik beruflicher Bildung im Kontext betrieblicher Umbruchsituationen*. In: Dehnbostel, P.; Walter-Lezius, H.-J. (ed.): *Didaktik moderner Berufsbildung*. Berichte zur beruflichen Bildung, Heft 186, Berlin 1995, p. 181 ff.

environmental statements of some companies, the working/learning groups were monitored by specially-trained staff members.

Can such an approach to organisational learning also be adopted by training centres and schools?

## E. School-based environmental training

It may be argued that, in schools, there is little scope for action because it is difficult for teachers to influence contextual factors. The institutional learning venue and the curriculum can hardly be changed by the teacher. However, teachers have a great deal of scope in their choice of methodology. They have the option to choose learner-activating methods and to vary them to suit the specific needs of the target group concerned.[26]

Innovative school initiatives must be supported by the authorities. However, there is often the problem of financial constraint. A "win-win-model" helps the authorities (1) save money; (2) provides extra funding for schools; and (3) initiates action-oriented learning.

In Germany, such a model was recently implemented as a pilot-project.[27] The objective of the project is for schools to cut down their infrastructure expenses by systematically reducing, for example, their consumption of energy or water or their amount of waste. Results from participating schools show that the costs for electricity, heating and cleaning per square meter were found to differ in a range of (500%)[28]. The stimulus for the school to reduce its consumption may be environmentally- and/or economically-motivated, because a certain percentage of the saving is paid to the school (50% in Hamburg, 75% in Bremen). The rest of the savings benefits the authority supporting the school.[29]

Taking part in this project means that all school participants (the head teacher, teachers, students, personnel in administration and maintenance — including the caretaker of the school) are involved. The first step in reducing consumption was a significant change in existing behaviour patterns. It was followed by energy/heating/water-saving technical measures. According to its level of success, the project pays more and allows the school to invest in more expensive, up-to-date techniques and to expand them to involve students in active and efficient environmental protection measures.

Apart from the economic benefits, the attraction of the "50% (or 75%) model" is that teachers and students are given the opportunity to establish environmentally-oriented action within a task-based, learning process. Developing strategies to protect the environment and reduce costs can be defined as learning processes. In vocational schools the students develop occupation-related environmental competencies by:

---

26 See: Fischer, A.; Auth, B.: *Prospects for giving environmental issues a stronger cross-curricular presence in education and training*. In: Biehler-Baudisch, H. (ed.): *Training for Europe 2002*. Berlin 1994, p. 56 f.

27 In Hamburg the so called "50 percent - , in Bremen the 75 percent-model"

28 Kraske/Lisop/Stärk: *Berufliche Schulen - Umwelt und Ökologie*. Max Traeger-Stiftung (ed.). Frankfurt am Main 1995, p. 73

29 Kraske/Lisop/Stärk: *Berufliche Schulen - Umwelt und Ökologie*. Max Traeger-Stiftung (ed.). Frankfurt am Main 1995

- designing concepts for environmental improvements linked to cost reduction and writing feasibility studies;
- coming up with a plan of action;
- carrying out the plan in projects and practical sessions; and
- evaluating the project.

Also, less vocation-specific syllabus subjects may refer to the project. For example, students may study and do research on:

- the global energy problem;
- ascertaining and documenting consumption rates;
- the greenhouse effect;
- consumption and advertising;
- consumption and ethics;
- energy and raw materials from renewable sources;
- sustainable development.

## F. Summary

This way of involving students in active and practical environmental protection measures in an economic context is an example for problem solving which integrates future-oriented qualifications. Of course, there are problems with integrating environmental considerations into vocational training, such as: (1) brevity of instruction time; (2) the unidimensional approach; and (3) the inadequacies of existing training curricula. These problems demand "a process of innovation in vocational education and training which casts overboard some well-established and even cherished conventions. An examination of the curriculum suffices to show that the traditional subject structure is outdated and out of line with the realities of working life. What is required is a total reorganisation of teaching and learning. Reorganising the content, in turn, calls for a review of conventional teaching methods. In other words: using a modified repertoire of methodologies, interdisciplinary and/or cross-curricular teaching and learning promotes the development of precisely those skills which students and trainees require for environmentally correct behaviour.[30]

In this respect environmental education can support — at the educational level — the economic and social processes which point us toward sustainability and away from resource-wasting economic activity.

---

30 Fischer, A.; Auth, B., p. 63

# THE (RE)INTEGRATION OF WORK AND LEARNING[31]

**André Hendrikse**
**European Centre for Work and Society, The Netherlands**

## A. Introduction: the challenge of (re)integration

Training and education have become specialised fields of expertise with their own know-how, practices, professionals, departments and policies. With the shift towards the (re)integration of work and learning, a new — and possibly significantly reduced — role for the training professional has emerged. Also, because "vocationalism" is an instrumental approach to education and training, the various education and training functions which are not directly related to task and job performance — the more "reflective" functions — are under pressure.

As a result of these developments the following questions emerge: How can training professionals fill this new role? Will training professionals support work-based learning ? If not, how can the field of education cope with their resistance to change? To what extent is this new direction in education and training a threat to society? How can issues of access to work-based learning be addressed? Is there a role for the State in this effort? Does work-based learning need accreditation? How can this be achieved? This paper on "The (Re)integration of Work and Learning" will explore some of the issues raised by these questions.

## B. Background

Highly formal and structured approaches often lead to the perception that learning and competency development are almost entirely a function of structured education and training. On the contrary, learning is inextricably connected to how we live our lives: learning is part of our daily experience. Indeed, it is widely recognised that the workplace is a key provider of learning experience. Research results demonstrate that what is learned on the job has a much greater impact than formal, structured training conducted outside the work context. For this reason, work-based learning is an important part of any process designed to improve qualifications.

The concept of work-based learning is linked to a wide range of developments in research, policy and practice in: vocational education and training systems, the organisation of work and labour relations. However, because it is implied and assumed — which makes it a strong concept — work-based learning is a difficult subject to study and a difficult subject for which to develop policy. Notwithstanding the difficulties, research on work-based learning has been carried out since 1987 by the European Centre for Work and Society and this paper introduces a selective overview of some key concepts and results of that research. The purpose here, however, is not to cover the entire range of results or developments in the field, but to raise awareness: (1) that learning has (again) become an essential part of work; and (2) that the daily workplace provides perhaps the strongest environment for learning.

---

31 The author would like to thank Dany Wijgaerts and, in particular, Marcia Hamilton for their comments on an earlier version of this paper.

The concept of work-based learning is explored in detail below in three sections. In the first section, the "why" question is discussed — the main reasons why work-based learning is on the agenda of policy and research; the second section addresses the "what" question and explores the meaning of the concept in more detail; and the closing section focuses on the "'how" question and addresses a number of work-based learning implementation issues.

## C. Why work-based learning?

There are a variety of reasons behind the current interest in integrating work and learning. Many of these involve recognising the fact that competitive advantage for enterprises and economies is increasingly linked to knowledge and know-how. Large-scale industries and geographical characteristics are no longer the decisive elements for competitiveness. Knowledge is the decisive element. Indeed, the concept of "lifelong learning" and the belief that the "information society" has replaced the industrial society, support the general acceptance of knowledge as a key to competitiveness.

Although classifying developments can be an arbitrary exercise, developments in the following three areas have specifically contributed to the current interest in integrating work and learning and work-based learning (Onstenk, 1994):

1. human resource management and development (HRM-HRD);
2. the quality of (the working) life; and
3. vocational education and training systems.

In addition, some general shifts and dynamics in the field have played a role in the current interest in work-based learning.

### *1. Human resource management and development*

Like many developments in the fields of human-resource management (HRM) and human-resource development (HRD), the interest in work-based learning most likely started with observation. Organisations observed that, under conditions of accelerating change, they had to find fast and flexible ways to respond to turbulent environmental demands. They saw that developing learning capacities was an effective way to respond to these changing requirements. The increased significance of learning thus forced organisations to find effective, organisation-wide approaches for developing learning capacity in the workplace. The concept of the "learning organisation", for instance, is often mentioned as the concept to which work-based learning is attached. Ideas such as "empowerment" and "self-managing teams" point to the development that "thinking" is no longer separated from "doing" but connected to it as "thinking and doing". Planning and evaluation tasks, for instance, have become integrated into many more work functions than in "traditional" forms of management. In addition, different ways of organising work and/or applying information technology have increased workers' access to information.

### *2. The quality of the working life*

When workers have autonomy, a supportive working environment and a variety of tasks and (other) learning opportunities at the workplace the quality of their life at work is improved. It is increasingly recognised that a good working and learning climate is not only in the best

interest of the employee, but is increasingly seen as an important way to combat stress and absenteeism and to support motivation and commitment.

### 3. *Vocational education and training systems*

Vocational education and training systems are under pressure to contribute more to the effective economic performance of individuals, enterprises and economies. The importance of the human-capital component in a nation's wealth has encouraged governments to move toward more closely integrating their education and production systems. This is reflected in such developments as:

- closer relationships between schools and the work environment through work experience, partnerships and the incorporation into the curriculum of skills required by employers;
- an expanded university system with closer links to business and a focus on economically-useful research; and
- vocationalised adult education to provide labour-market training for the secondary labour force and the unemployed.

With decreasing public expenditures, the need to bridge the gap between formal training and the workplace and the requirements of the labour market, work-based learning has become a critical area of focus. An important argument in favour of work-based learning is that the *loss* related to transferring "what has been learned" to the workplace is *less* than that incurred when transferring knowledge from training which is detached from the application context.

## D. The "What" of work-based leaning: shifts and dynamics

Although the empirical basis on which the research was conducted was not always solid[32], the results of various ECWS ( European Centre for Work and Society) projects in the field of work-based learning and learning organisations, suggest some developments that should be taken into account. These include the following:

- There has been a shift in focus about learning. The perception of learning as personal development has moved to a more instrumental approach in which learning (at the individual, group and organisational levels) is harnessed to organisational competitiveness. At the same time, with the gradual growth of labour-market uncertainty, it has become clear that individual workers are vulnerable to labour market forces if their learning experiences have been tied to one specific job or organisation. An individual's "employability" has become a focal point for indicating his/her capacity to adapt to new requirements.
- There has been a shift in the idea of *learning* as the responsibility of HRD-professionals to: (1) its incorporation in a broad range of human resource management strategies; and (2) its inclusion in company strategy, culture and structures; and (3) its being seen as one road to continuous organisational improvement.
- There has been a shift in the way learning outcomes are understood — from the tangible to the intangible — from observable competencies and skills not related to the context, to more intangible outcomes which are expressed as images, conceptual maps, shared understandings, commitment and loyalty.

Together, these shifts and dynamics point at a paradigm change — a shift in thinking and policy in which informal, unstructured and context-bound learning has become critically important.

## E. The concept of work-based learning

Skills and knowledge are acquired in numerous settings and may be arrayed along a spectrum according to their proximity to the main application environment. At one extreme are classroom-based school courses, while at the other is (implicit) *learning-by-doing* — in any context (including work and leisure) — without any pedagogical arrangement or intention to learn.

---

32 Since 1987 the ECWS has realised more than ten projects and programmes on the issue of learning organisations. Although our aim was to continuously improve our analytical framework based on the same concepts, it was not possible to use a 100% consistent and homogeneous methodological approach. This was mainly due to the fact that these projects and programmes on learning organisations, institutions and authorities (and the objectives of these projects) were so diverse and specific that specific methodologies had to be used (e.g. European comparative research; policy recommendations).

There is wide consensus that the workplace is a key resource for learning. This belief is expressed in vocational education and training and HRD policies. It is also shown in labour-market, work-experience selection and recruitment assessments. In fact, *learning by doing* — with or without specific support — is the oldest way of learning[33].

The concept of work-based learning itself, however, is characterised by lack of clarity, incoherence and elusiveness. However, that it is "everywhere and nowhere" allows work-based learning to be both (1) a strong practical concept ( which can be moulded to different settings and purposes); and (2) a wide spectrum of overlapping and competing paradigms at the level of both theory and practice.

## F. Education, training and human resource management

In our work at the European Centre for Work and Society we have attempted to map the extensive field of work-based learning and to understand to what the concept refers. To this end we have identified two broad approaches. Each of the approaches has its own "logic", policy fields and terminology. However, to a certain extent, the approaches overlap and complement each other. The first approach maps how work-based learning bridges the gap between training and application and the second approach maps work-based learning processes in the workplace. Both approaches map the (re)integration of work and learning and may be viewed, in a way, as two sides of the same coin.

- **Approach #1:** The first approach involves vocational education and training systems and includes in-company training. It is dominated by both the individual dimension and the formal, structured learning approach. Here, work-based learning is seen as a way to bridge the gap between training and practical application. Learning is provided in context, although vocational education and training researchers and practitioners still approach it within their vocational education and training curriculum-centred, skills-oriented framework. The discourse of researchers and practitioners is centred on skills, competencies, learning outcomes and transferable skills. Important developments that shape the debate in this approach are: responses to labour-market developments, shifts in responsibilities for vocational education and training (to and from the State, the organisation, the individual); innovations in pedagogical, technological and institutional arrangements (including new roles for training professionals); and the accreditation of work-based learning.
- **Approach #2**: The second approach involves new organisational forms and changing human resource management perspectives. Here, the role of learning is seen through its contribution to increasing the organisation's capacity to respond to changing requirements. In the light of two factors — (1) the growing awareness of the importance of human resource development and (2) the shift towards formal training situations being responsible for only a small share of learning — new strategies have been developed to induce learning at both the individual and organisational levels. Concepts such as "knowledge-based learning" or "the learning organisation" have become umbrella terms which refer to this approach. Based on the above, work-based learning is considered to be a key approach for developing organisational learning capacity.

---

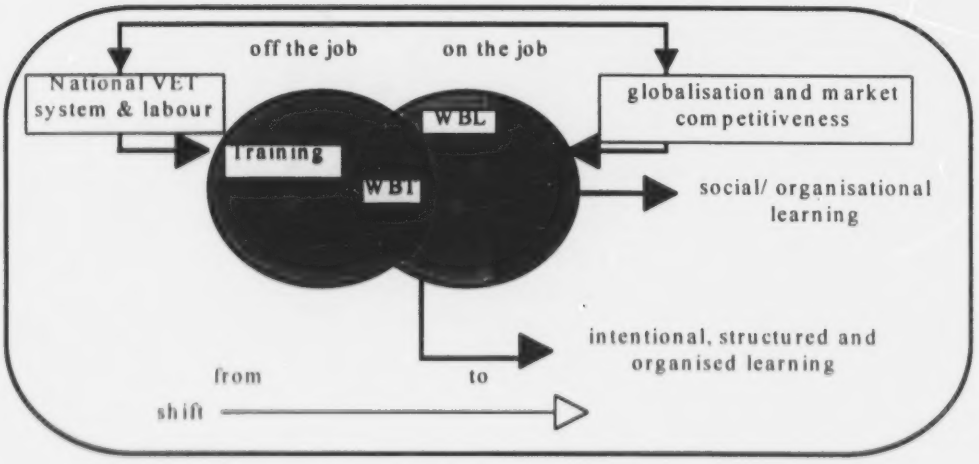
33 This is why this paper is called "The *(Re)*integration of Work and Learning.

## G. The domains of work-based learning

The following figure shows the two approaches described above. The types of work-based learning displayed in the figure have contributed to the mapping of different work-based learning domains:

*Figure 1*

*Domains of work-based learning*
*(source: Danau, D.; Hendrikse, A. and Sommerlad, E. (1996) Work-Based Learning, Maastricht, the European Centre for Work and Society)*




A vast range of work-based learning types may be found in this figure. The following discussion introduces a few of them.

The left side of the left circle refers to "off-the-job" education and training, until recently, the dominant form of education and training. Now, however, there is growing doubt about the efficiency of heavy investment in training. For this reason, there is increased interest in transferring learning from the training environment to the workplace and, thus, the prospects for work-based learning have been enhanced. If, in the future, learning takes place in the learner's working environment, or if learning is otherwise strongly linked to the actual work setting, this type of training may be included in the concept of "work based learning".

The middle part of the figure, where both circles overlap, includes forms of work-based training (wbt) which are formal, structured, managed and have clear learning targets and which take place (at least partly) in the workplace. Often, this type of learning is validated by external educational providers and is organised in partnership with senior workers, learning professionals and worker-learners. Models of '*alternance*' including, for example, the various forms of (modern) apprenticeship, are examples of work-based training.

The right circle covers the many forms of learning which take place in the workplace and includes the types of intentional, structured and organised forms of learning which have explicit pedagogical strategies, learning that is an implicit side-effect of working, and forms in which learning is at the heart of working. It includes a variety of strategies which can be integrated into

normal management practices, into the allocation of work and into the organisation of support for work.

Examples of work-based learning which comprise some of these learning types may not be recognised as such, but form the most important sources for learning. For example, they include specific measures such as job rotation, increasing the variety and complexity of tasks and increasing autonomy in the workplace; but they also include learning processes inspired by formal and informal communication with colleagues, suppliers and clients. Although many HRM-HRD strategies focus on formal training, a number of authors argue that at least 80% of the learning at the workplace takes place informally or incidentally (Docherty, 1994). This share thus refers to the right side of the figure above. The concept of the "learning organisation" builds upon these kinds of learning situations.

## H. The "how" of work-based learning: implementation issues

It is important to preclude any discussion on the implementation of work-based learning with some assumptions upon which our conclusions are based. We have assumed that learning processes and the development of competencies result from the specific combination of the following: (Onstenk, 1994):

- the worker's skills and qualifications (formal education, work experience, learning skills);
- the worker's ability and willingness to learn and develop competencies; and
- the learning possibilities in the workplace (tasks, cooperation, control, autonomy, challenges, training policies, organisational change).

### *1. Reference points for implementation*

To benefit optimally from these insights about work-based learning, at least two reference points for implementation may be distinguished. These reference points are derived from the figure presented above, and are as follows:

- education and training arrangements; and
- the learning climate in the workplace.

A wide range of issues which promote and support work-based learning may be identified for each of these two starting points. Some general illustrations are provided below. However, it must be noted that the most important message to be communicated here is the raising of awareness about the opportunities available in both policy and daily practice which can enhance work-based learning. It must be stressed, however, that it may not be possible nor desirable to make work-based learning a separate policy issue.

### 2. *Education and training*

Education and training systems include both obstacles and opportunities for work-based learning. These include:

- assessment, certification and accreditation issues (Learning experiences based on work-based learning are hard to assess in the (external) labour market. Thus, this may be a reason to reconsider systems of accreditation);
- new arrangements between education and training systems and companies;
- reconsideration of what should be taught in formal education and training, e.g. focus on developing learning skills and attitudes; and
- issues of access to work-based learning [Not all people have access to work-based learning opportunities and this problem may be addressed in social policy related to education and training (the responsibility of the State, enterprises and individuals)].

### 3. *The learning climate in the workplace*

The conditions for workplace learning may be analysed in terms of the learning potential of the job, i.e. the likelihood that learning processes will occur in a particular job situation. Some authors (Bartram et al, 1993) refer to this as the "learning climate" of the workplace. Elements in this concept include: management style, opportunities to experiment and learn, autonomy, teamwork and facilities for learning (including access to information). It is obvious that the starting points necessary to improve the learning climate are found within HRM management approaches and instruments. In particular, teamwork, with its high level of autonomy, is considered to be one of the pillars through which work-based learning can be enhanced. Beyond this, successful work-based learning requires not only particular workplace characteristics, but also that the worker is truly willing to learn and has sufficient basic skills to do so. This is an assumption that is often both overlooked and taken for granted in training research and design. Further, the power relationships within organisations must also be taken into account. In general, too little attention is paid to both the conflicting and parallel interests of employers, managers, trainers, and support staff. Underlying the philosophy of work-based learning is an openness and a willingness to share know-how, while power relationships often involve incomplete sharing or *no* sharing of know-how.

## I. (Re)integration of work and learning

Indeed, work-based learning goes back to the more integrated approach to learning and work that was common practice before Tayloristic approaches were adopted. Although its reference points (education and training arrangements and the workplace learning climate) are basic and implicit, work-based learning is using an historic perspective to rethink some current practices in the fields of education and training. Thus, the (re)integration of work and learning is opening the fields to reexamination, particularly in terms of current "Qualification Challenges in Europe".

The key question remains: is Europe investing enough to be able to continuously increase its understanding and know how on the issue of (re)integration of work and learning, so that it is prepared for a sustainable economic and social future?

## Sources and References

This paper reflects results from a number of projects which have been carried out by the European Centre for Work and Society since 1987. In particular, the *Work Based Learning project (* commissioned by DG XXII of the European Commission, carried out in co-operation with the Tavistock Institute in London, 1995-96) has provided the lion's share of the information on which this paper was based.

Publications and papers: Work-Based Learning project:


1. Danau, D.; Hendrikse, A. and Sommerlad, E. *Work-Based Learning,* Maastricht, the European Center for Work and Society. 1996.
2. Danau, D. and Sommerlad, E. Working Conference on Work-based Learning, preparatory paper for conference, London, 13 December 1995, The Tavistock Institute/the European Center for Work and Society, 1995.
3. Hendrikse., A. *"Thoughts and actions in the field of work and learning"* (the European Center for Work and Society 1987-1995), paper presented at the Conference on Skill Formation, *On the Job Learning and On the Job Training*, Amsterdam, 28/29 September 1995
4. Sommerlad, E. *"Work-based learning for enterprise renewal: panacea or problematic?"* In: The Tavistock Institute Review 1994/95, London, The Tavistock Institute, pp. 39-45, 1996.


Additional works referred to in the text:


5. Bartram, D.; Foster, J.; Lindley, Brown, A.; Nixon, S. *The Learning Climate Questionnaire.* Employment Service and Newland Park Associates Ltd. 1993.
6. Docherty, P. *"The programme on learning organisations."* In: Swedish Work Environment Fund, *Learning at Work* 1994, Stockholm, Arbetsmilj–fonden. 1994.
7. Onstenk, J. *Leren en Opleiden op de Werkplek.* Amsterdam, Max Goote Kenniscentrum 1994.

# PART III:

# WORKING GROUPS

**Working group I: The learning environment**
Peter Grootings (chairperson)
Grashina Kisuniene (rapporteur)

**Working group II: The role of teachers/trainers**
Csaba Fejös (chairperson)
Dan Fagerlund (rapporteur)

**Working group III: Methods and tools**
Andrejs Rauhvargers (chairperson)
Sören Nielsen (rapporteur)

# WORKING GROUP I: THE LEARNING ENVIRONMENT

Chairperson: Peter Grootings (The Netherlands)
Rapporteur: Graþina Kiðûnienë (Lithuania)
Participants: Hilde Biehler-Baudisch (Germany)
Robert Blom (The Netherlands)
Andre Hendrikse (The Netherlands)
Azza Jaganjac (Bosnia and Herzegovina)
Jan Kristin (Slovenia)
Allgui Mustafai (Albania)
Milena Coradini (European Training Foundation)

## A. Introduction

This report summarises the main outcomes of the discussion among the participants of Workshop One, "The Learning Environment", an aspect of curriculum innovation which is often overlooked in reform programmes. The participants in the workshop represented EU and Phare partner countries and European Training Foundation staff, as follows:

### *1. Key questions discussed*

The framework for the discussion about the learning environment in vocational education and training curriculum innovation was provided by the following questions:

- Why are changes in the vocational education and training system needed?
- What should these changes be?
- How should such innovations be introduced and implemented?

### *2. Themes*

All of the participants agreed that "problem solving" — as an approach to both vocational education and training innovation and content — provided the theme which integrated all three questions. All participants stated that their countries were struggling with unique problems in the areas of economic and curriculum reform. They stated that they had also determined that their former structures did not adequately provide the qualifications appropriate for a modern market economy in which decision makers are faced with difficult options.

The fact that in most countries the term "vocational training" is being replaced by the term "vocational education" marks a shift in emphasis. The field has moved from specialised, workplace training to a broader emphasis on a more generic, problem-solving approach with the objective of preparing a flexible, problem-oriented workforce capable of responding to rapidly transforming economies. The new goal for vocational education and training learning environments is to help to produce an adaptable labour market in a decentralised, increasingly competitive and increasingly international economic environment.

## B. Conclusions

The conclusions of the discussion are set out below as a series of assertions relating to the learning environment for vocational education and training. These broad assertions were widely accepted by the discussants:

### *1. The learning environment should shift the focus from teaching to learning*

At all levels of education "learning" should be seen as more important than "teaching". In the past there has been too much emphasis on memorisation and insufficient emphasis on developing the problem-solving skills and attitudes of learners. Teaching methods need to focus on the *outcomes* for learners in the form of the demonstrated *competency.* Such competency is more likely to emerge when experiential learning methods are employed. Through more active, project-based learning, the deep understanding required of vocational concepts and skills for a rapidly changing economy is more likely to be developed by learners.

### *2. A problem-solving environment and a problem-centred curriculum can be the catalyst for change in vocational education and training*

Applying knowledge and skills to new and unpredictable situations is more likely when knowledge and skills are acquired through experiential, active learning. Thus, by basing the curriculum on solving problems similar to those experienced in the world of work, this transfer of knowledge and skills is more likely to occur.

### *3. Reforming the teacher training curriculum is a necessary condition if appropriate learning environments are to be created*

Learning environments are essentially created by teachers and are thus dependent upon their creativity, their philosophies of learning and teaching and their understanding of how to create a problem-solving environment in the classroom. Because the teacher's role and skills are so central to the learning environment, the preparation of vocational education teachers (and the continuous provision of retraining opportunities for practising teachers) is crucial. Many current, teacher-education programmes in universities and in other higher education and training institutions are out of date. To concentrate on updating these teacher-development programmes would have a positive effect which would multiply throughout the vocational education and training system.

4. ***Close attention must be paid to creating appropriate physical environments for learning if the necessary curriculum changes are to be effective***

It is evident that however imaginative and well-trained vocational education teachers are, their ability to promote active, student-centred learning will be severely constrained if the appropriate facilities and equipment are not in place. By promoting more group problem solving and the active involvement of students, even with limited resources, there are many ways in which the physical environment of the classroom or workshop can be adapted to build student confidence and to encourage autonomy. For example, the arrangement of furniture, the availability of flip charts and felt pens for brainstorming, spaces for independent study and experimentation can all be implemented without massive capital investment.

5. ***Learning environments must be linked to the economic workplace and made relevant to the processes which characterise the economic environment***

To some extent, the learning environment in the school can replicate that of the real world of work into which students are preparing to enter. The learning environment may be made relevant to the environment in which students will operate in their working lives by ensuring that they: (1) approach problems in teams; (2) develop positive attitudes, good interpersonal relations and communication skills; (3) focus on clear outcomes for work activities; (4) clarify tasks; and (5) allocate shared responsibilities.

6. ***Continuing research into the effectiveness of learning environments is required and the results of this research must be incorporated into the preparation of vocational education and training teachers***

There has been a tendency for academic researchers to ignore the more practical and pragmatic aspects of teaching and learning in vocational education and training — particularly in the subtle interplay between the learning environment and teaching and learning processes. Also, research conclusions are often slow to be disseminated to the trainers and the teachers to whom they would be most useful. More timely ways to integrate research results into approaches used by training communities must be established.

## C. Comment

It is always easier to find answers to "what" and "why" questions than to "how" questions. This workshop discussion was no exception. However, there was one completely unanimous determination among the partner-country delegates.

All concluded that if they were to successfully answer the challenges of the "what" and "why" questions, they would require and welcome support from the European Training Foundation. As curriculum reforms are introduced across the partner countries, changes in vocational learning environments will be greatly accelerated if resources, experience and skills can be transferred through collaborative projects of the sort which are already proving to be of value in a number of European countries.

In particular, because each country has its own specific problems to solve, *the exchange of experience between on-going projects and countries at different stages of development* was regarded as fundamental to finding answers to the question of "how" to implement reform. In addition, improving teacher training was unanimously regarded as the key for implementing long-lasting reform.

*Graþina Kiðûnienë, Vilnius, 14.10.1996*

## WORKING GROUP II: THE ROLE OF TEACHERS/TRAINERS

Facilitator: Csaba Fejös (Hungary)
Rapporteur: Dan Fagerlund (Sweden)
Participants: Bernhard Buck (European Training Foundation)
Peter J. Van Engelshoven (The Netherlands)
Janja Meglic (Slovenia)
Edwin G. Nelson (United Kingdom)

We started our discussion with an explanation from each representative about each country's present system for educating vocational trainers and teachers. We distinguished between teachers and trainers and concluded that vocational teachers (who mostly work in schools) and vocational trainers (who mostly work in companies) are trained differently. Each country (1) has a different system for educating them; (2) requires a different amount of training time; and (3) has different demands for the education of each professional category. We also concluded that the differences between countries would continue into the future. Nevertheless, the discussion raised some key questions, as follows:

- If the needs and demands of vocational education and training are changing (towards more complex types of knowledge and competencies) what kind of education will the teacher of the future need?
- To what set of demands must the teacher of the future respond?
- Is it possible to maintain boundaries between the knowledge needed to teach theoretical subjects and the knowledge needed to teach practical subjects?

In our further discussion we used a model which we thought useful in allowing us to visualise a holistic approach to knowledge in terms of the new, future role of trainers and teachers. The model defines four types (or forms) of knowledge as:

| | |
|---|---|
| Skills | = Knowledge as doing or executing |
| Facts | = Knowledge as information |
| Confidence | = Knowledge as experience |
| Understanding | = Knowledge as sense and meaning |

In this model, it is important to understand that there is no hierarchy between the types of knowledge: one type is no more important than another. Instead, as we look at it, each form of knowledge is closely connected to and dependent on the other. The model may be used to describe the fact that all four types of knowledge may be found in all types of education; however, one type of education focuses more on skills and another focuses more on facts and understanding.

In vocational education and training in the past, and even today, the focus has been very much on skills; however, we believe that in the future we are moving away from a strong focus on skills and towards a more complex type of knowledge which involves all four types.

The group concluded its discussion by coming up with a vision of education in the future where, in our view, the very strict boundaries between academic education and vocational education and training will be difficult to discern.

If this is to be the case, then, we must ask ourselves, what kind of background and education must future teachers and trainers have? Indeed, we must even ask ourselves if it is useful to distinguish between teachers and trainers. At least we must make sure that different kinds of teachers cooperate so the trainees actually do participate in a holistic approach to knowledge and competencies. We ended the discussion by talking about:

- methodological issues and new needs for the future;
- how to develop new learning situations; and
- how we must take new methodologies into account in educating teachers and trainers.

## A. New roles and new learning situations

A summary of our discussion follows in the form of key statements.

***In the future:***

- the teacher/trainer will be more like a counsellor or coach;
- the schools must be more open and provide students with options for coming to school at different times during the whole week, including weekends;
- the trainer will be more like a facilitator;
- schools will be more like workshops;
- teaching will be student driven rather than teacher driven;

Also, under the key word "active learning" we found different kinds of new methodologies and competencies, such as:

1. Learning by discovery
2. Gaining experience by making mistakes;
3. Working and practising in projects;
4. Creating real situations;
5. Having opportunities for personal growth;
6. Self-regulated learning;

7. Preparing to deal with situations of uncertainty;
8. Learning how to learn; and
9. Solving problems (problem solving).

We were left with two main thoughts for consideration:

1. "Sometimes today, young people have the answers, but we don't know the problems"; and
2. "How can we prepare teachers for this type of situation and how can they still look upon themselves as teachers?"

## B. Documentation for Group II: The role of trainers/teachers

### *1. Teachers and Trainers*

#### A. Education

- BA Engineering & BA Education — BA Engineering Teacher
- MA Engineering & MA Education — MA Engineering Teacher
- Master of Skills & Maturation — Trainer

  Examples for VET Teacher's Education:

| | |
|---|---|
| VET Schools: Schools for Skills | (3 years) |
| Vocational Secondary Schools with Maturation | (4 years) |
| Technikum | (5 years) |

- Teacher: vocational schools; university certificate; clerks of the "lander"; theoretical knowledge
- Trainer: market oriented, companies, institutions; no need for certification; integration of work and learning.

#### B. Tasks

- Six Functions for Teachers and/or Trainers
  1) Tutor, Mentor, Supervisor
  2) Group instructor, animator, leader, lecturer
  3) Consultant, advisor, dean
  4) Developer of curricula and learning materials
  5) Educational manager/policy maker
  6) Educational policy decider
- Teachers: *In vocational schools:* theoretical subjects: education academy 2 or 4 years and Ped-anzag, examine/min.

- Trainers: *In companies*: master of craft or industry practical orientationer-company Centres: master of craft or industry two Types: (1) Craft: owner-employer; (2) Industry: mentor/employer, group mentor/big companies.
- Education demands: At least three years of vocational school; At least three years of practical experience or work; Masters degree.
- Development of: Common methods; Common literature; Common tools; New Terminology for Trainers.

## 2. *Didactic Shape*

### A. Holistic Approach -- Knowledge as:

Facts — Skills
Confidence — Understanding

### B. Problem Solving: Methodology: Open structured learning materials

- Self steering
- Self organising
- Finding own solutions
- Task Assignments
- Projects
- Going into work
- Coming in contact with real life situations
- *Hierarchy of objectives ➔ related methodologies*

### C. Active Learning

- Real situation
- Learning-Working Place
- Opportunity for personal growth by working and practising in projects.

## 3. *Forecasting the Future*

### A. Trainers and Teachers

- Rapid innovation; lifelong learning; raising of costs ➔ open learning, shift to coaching, developing, counsellor, manager — learner satisfaction.
- Teaching in a client-driven way.
- Trainer developing role ➔ to support learning and practising.

**B. New Roles**

- Trainer for some basic skills; facilitator with projects; increasing project work and learning.
- Trainer as Counsellor: Client (student) makes own training materials with teacher using training guide.
- Learning by discovery: school as a workshop: teachers should get more scope of action and manage their schools together with their students.
- Making experience by mistakes — learning from mistakes.

## WORKING GROUP III: METHODS AND TOOLS

Facilitator: Andrejs Rauhvargers (Latvia)
Rapporteur: Søren Nielsen (Denmark)
Participants: Anatoly Glazunov (Russia)
Bohumil Janys (The Czech Republic)
Alexandra Joma (Latvia)
Paul Olry (France)
Pavel Petrovic (The Czech Republic)
Marian Piotrowski (Poland)
Inna Sarv (Estonia)

The facilitator, Andrejs Rauhvargers, opened Working Group III by pointing out the two subjects to be discussed:

(1) active methods for learning problem solving; and

(2) open-structured training materials.

He proposed organising the proceedings of Working Group III so that the group first identified issues, then clarified concepts, then engaged in general discussions and, finally, formulated some points of action to bring back home. The group determined to be concrete and agreed that there was a need for an end-product.

### A. Definition of Terms

The first round in which the group identified issues and clarified concepts took place as a *tour de table* and dealt with the following question: *"What is understood by the terms used when we talk of 'active methods' to learn 'problem solving'?"*

We agreed that the term "active methods" implied that:

1. The student is at the centre as the main problem solver. If this is the case, the basic question arises, "How should teaching be organised to support the new learning environment?"
2. The vocational education and training system must shift attention from the teacher and traditional learning materials to student-learning activities;
3. "Active methods" must assume that the students themselves formulate the problems;
4. Vocational education and training planning must be creative to formulate a new and well-balanced ratio between the students' own learning activities and the information provided by the teacher;
5. It is the responsibility of the learner to define and to reflect upon his or her own learning methods and to be willing and able to influence the entire learning environment.

After this round, the working group identified the items to be discussed in detail, as follows:

- problem solving in vocational education and training;
- conditions required for the use of active methods; and
- open-structured training methods.

As a way to capture concepts and to allow us to organise the discussion, the group decided to use the mapping/writing card method. This turned out to be a good approach, as it avoided unclear usage of terminology in our transcultural discussions.

## B. Problem solving in vocational education and training

The discussion started with some broad questions:

- "What is meant by the term "problem?"
- "Who has problems"
- "Do you have any problems, and, if so, why don't you solve them?"
- "What are the requirements of a 'problem' for it to be a relevant starting point for problem-oriented vocational education and training learning methods?"
- "What are the specific problems for vocational education and training systems in CEEC countries?"

The group tentatively identified specific problems as follows. Vocational education and training systems need:

- an approach to learning which differs from other educational sub-systems;
- different subject matter; and
- a unique system for a separate population group.

Estonia's specific, vocational education and training system problems were then presented. Using the Danish-Estonian "DEVS" project as the example, the following problems were documented: (1) the school-company interplay had totally broken down; (2) the job profiles were much too specific; (3) there were insufficient teaching materials in all vocational schools; (4) an authoritarian, teacher-centred approach to teaching existed; and (5) there was a fundamental lack of teacher training in vocational education and training.

It was then pointed out that, seen from the point of view of the teacher, in providing vocational education and training today we overestimate the importance of what is learned in vocational schools because students learn more from what they see in practice and what they do in practical training than in didactic situations. The tendency today is to try to build up modular structures based on industry needs. However, another problem is that at the moment in CEEC countries few companies signal a desire for involvement in the vocational education and training process.

The point of view of the Ministry of Education representatives in the group was that the overriding problem today is the need for an educational programme classification system. They maintain that a framework is needed before new, active-learning curricula can be formulated.

It was then pointed out that scientific institutes of pedagogy in many CEEC countries are undertaking research to develop the necessary infrastructure to support problem solving as an active-learning method. Thus, in Russia a four-level taxonomy — which categorises problem-solving readiness — is used and is presently being fleshed out. From the student perspective, the taxonomy moves from complete teacher dependence to complete student independence for problem-solving, as follows:

**The Four Level Problem-Solving Taxonomy**

1. Teacher constructs, teacher solves;
2. Teacher constructs, students solve;
3. Teacher and students construct, students solve; and
4. Students construct, students solve.

Further, in this modernisation process, the distribution of roles between teachers and students is undergoing fundamental change. In both Eastern and Western Europe a totally new balance must be found between teacher and learner. Teachers are having a difficult time with "problem solving" because, at this time, the capacity of vocational teachers/trainers to create appropriate "problems" for students is insufficient.

The situation is exacerbated by the fact that, today, in many CEEC countries companies are only insignificantly involved in the vocational education and training process. Teachers find it difficult to reduce their own feeling of responsibility for the learning process and to accept a new approach in which students' learning is mainly their own responsibility. Another question then emerges. "Are the students willing to engage in their own problem-solving processes?"

The group then discussed a related, key issue — the importance of learning social competencies. It was pointed out that while key qualifications, such as *learning to learn* and *problem-solving* skills, are clearly necessary, the vocational education and training system cannot just begin a journey towards "context-free" learning. The acquisition of the key qualifications which cover the entire employment system must take place within a branch/occupational area specified in the various streams within vocational education and training-system configurations. Another challenge is that, while it is necessary to provide opportunities for learners to develop the personal skills needed in industry, finding proper ways to assess and evaluate such personal skills still pose unresolved problems.

## C. Conditions for active-learning methods

There are two prevalent tendencies in the CEEC countries at this time: (1) the quest to introduce active, problem-solving methods in vocational education and training; and (2) the modularization of the curriculum.

We asked ourselves two questions. "How do we understand this modularization of the curriculum?" and "How does modularization support or hinder active-learning methods?" The key concept here is the different temporal horizons involved.

BEST COPY AVAILABLE

On the one hand, the modularization of curriculum implies flexible systems for the individual and the option to increase one's qualifications progressively. On the other hand, modularization often hinders the use of student-centred, active-learning methods - if the learning is organised in short modules. The group concluded that, if active methods are to be used (because learning takes time) modules must be longer and allow for individualisation of learning styles.

A great challenge in Eastern as well as Western Europe was identified in the growing pressure towards individualisation: students are increasingly seen as customers; teachers are seen as suppliers of services to critical clients, and the content of learning is seen as a marketable product which can be "bought" in small pieces according to the wishes of the learner.

This situation can easily lead to short-term solutions during the transition phase of CEEC countries. As was mentioned by several participants in the working group, the challenges are great, the social partners are weak, and vocational schools must not only change themselves but also take an active part in changing the world outside the classroom.

A common denominator between East and West is the uncertainty of future qualifications and new ways to cope with the organisation of learning processes in schools and companies. Coping with uncertainty also means that basic "truths" in existing vocational education and training structures must be questioned. The group also briefly discussed to what extent the "social partner" structure (born out of the industrial revolution) was necessarily relevant or the right approach in this "cognitive" society so well described in Edith Cresson's "White Paper."

Another cluster of questions discussed by the group involved how to organise and assess active-learning methods in the classroom. One critical point mentioned that the formal classroom layout in the CEEC countries does not support new learning methods based on group work and "competency-based" learning. How can a more creative atmosphere between teachers and students be created?

The group decided that a number of fundamental questions cannot be answered. If you succeed in forming student groups in which students define their own goals and organise their own learning how can you, as a teacher, be sure that your students learn chemistry? How can you assess the outcomes of these active-learning processes in terms of skills, knowledge and attitudes? How do you get the students started in active-learning processes? Experience in a number of countries shows that students are not motivated if they are merely told about a situation for which they must solve problems. Students are motivated when they themselves identify real-life problems.

## D. Open-structured training methods and materials

Working Group III was given the task of discussing methods as well as tools. However, because the group spent a great deal of time discussing active methods for learning problem solving, there was only time for a relatively cursory discussion of open-structured training materials.

The group started the discussion by trying to define the terms "training aids" and "training materials" and concluded that these terms refer to more than textbooks. Some argued that "tools" was a more precise term and that we needed to discuss open-structured training materials within a broad curricular framework. The following curricular model was drawn up.

***The Curricular Model***

| Objectives | | Starting Situation |
|---|---|---|
| What<br>Where<br>In what order | Methods | Teaching Learning |
| Teaching | Aids | (materials, etc.) |
| | Evaluation | |

Another difficulty was our mutual understanding of the term "open-structured". As a preliminary definition, the group agreed that the concept "open-structured" referred to the fact *that reconstruction was possible, and the materials were flexible and adaptable.*

But we also agreed that "open-structured" also suggests:

- open learning centres;
- distance learning methods;
- open learning material such as multimedia packages; and
- reference libraries.

The creative, pedagogical use of films, radio, TV and newspapers was also briefly discussed and examined in problematic terms.

Inspired by one of the seminar's key-note speakers, we discussed, at some length, using global learning materials provided through the Internet. We decided that although information and knowledge might be provided, what is required, in addition, was enough additional training of students and teachers to allow them to define and specify their needs for information, to better perform sorting-out processes and to be critical users of the services provided by the emerging information society. Access to the Internet was not only seen as a pedagogical tool, but also as important in the sense that tele-working qualification requirements (to be used in the office of the future) are growing in all countries.

## E. Points of Action

Each participant in the working group was asked to write one or two sentences containing points of action which he or she might directly implement at home. Papers were then handed to the rapporteur. The following action points were formulated.

### *1. Participant #1*

- share knowledge with other colleagues in Estonia;
- start negotiations to try to change the legal rules of assessment so that we might also be able to evaluate the development of the personal skills which are much needed in the CEEC countries.
- look for partners in other countries dealing with these problems; and
- start discussions on the pressing need to prepare curriculum for training SME owners.

### *2. Participant #2*

- create a new model in which to implant active methods into Russian vocational education and training to be tested in the years 1997-1998;
- select some vocational schools as the field of practical pilot activity;
- retrain the teachers in "active methods" within vocational training; and
- construct teaching/learning materials in two or three qualifications in an open-structured way.

### *3. Participant #3*

- continue the development of the vocational educational programme classification (occupational fields and levels);
- transfer the information presented at this conference to the working group at home which was set up to formulate the new law on vocational education;
- support curriculum developing groups through the framework of international co-operation projects; and
- try to strengthen co-operation with social partners.

4. ***Participant #4***

- try to develop further contacts within the network established between people at this conference;
- increase the exchange of new technologies between CEEC and EU countries;
- plan visits in my country for experts, policy makers and practitioners from CEEC countries.

5. ***Participant #5***

- start to elaborate vocational education and training teaching materials which more easily integrate problem-solving methods;
- study how to use the Internet to solve a number of vocational education and training problems.

6. ***Participant #6***

- disseminate as much as possible the idea for the need to introduce active-learning methods in this changing world; and
- try to convince people that active-learning methods must be implemented now.

## LIST OF PARTICIPANTS


**Hilde BIEHLER-BAUDISCH**
Bundesinstitut für Berufsbildung
Fehrbelliner Platz 3
D-10707 Berlin
Tel: +49-30-86.43.22.95
Fax: +49-30-86.43.24.55

**Robert BLOM**
Wageningen Agricultural University
Computechnion
Dreijenplein 2
NL-6703 HB Wageningen
Tel.: +31-317-48.26.96
Fax.: +31-317-48.29.70
e-mail: Robert.Blom@buro.iend.wau.nl

**Bernhard BUCK**
European Training Foundation
Viale Settimio Severo 65
I-10133 Torino
Tel: +39-11-630.23.65
Fax: +39-11-630.22.00
e-mail: bbu@etf.it

**Catherine CIECZKO**
European Training Foundation
Viale Settimio Severo 65
I-10133 Torino
Tel: +39-11-630.22.66
Fax: +39-11-630.22.00
e-mail: cac@etf.it

**Hélène JOURDAN**
European Training Foundation
Viale Settimio Severo 65
I-10133 Torino
Tel: +39-11-630.23.71
Fax: +39-11-630.22.00
e-mail: hjo@etf.it

**Peter J. VAN ENGELSHOVEN**
Pedagogical Technical University
P.O. Box 826
NL-5600 AV Eindhoven
Tel: +31-40-24.74.456
Fax: +31-40-24.43.960

**Dan FAGERLUND**
National Agency for Education and Ministry of Education
SE-103 33 Stockholm
Tel: +46-8-405.18.49
Mobile: +46-708-64.06.38
Fax: +46-8-405.44.98

**Csaba FEJÖS**
Technical University
Egry J. Str. 20-22
H-1111 Budapest
Tel: +36-1-463.26.52
Fax: +36-1-463.16.97
e-mail: fejos@tttk2.tttk.bme.hu

**Haralabos FRAGOULIS**
European Training Foundation
Viale Settimio Severo 65
I-10133 Torino
Tel: +39-11-630.23.04
Fax: +39-11-630.22.00
e-mail: hfr@etf.it

**Maria Francesca GANDINI**
European Training Foundation
Viale Settimio Severo 65
I-10133 Torino
Tel: +39-11-630.22.71
Fax: +39-11-630.22.00
e-mail: mga@etf.it

**Anatoly T. GLAZUNOV**
Institute for the Development of Vocational Education
Kadrova Str. 8
RF-117804 Moscow
Tel: +7-095-152.67.01
Fax: +7-095-152.45.31

**Peter GROOTINGS**
Korfowe 7
PL-05 085 Karnpinos
Tel: +48-22-725.04.33
Fax: +48-22-725.04.33
e-mail: grootings@polbox.pl

**Marcia HAMILTON**
Corso Re Umberto, 89
I-10028 Turin
Tel: +39-11-59.10.26
e-mail: marcia.hamilton@torino.alcom.it

**Andre HENDRIKSE**
European Centre for Work and Society
Hoogbrugstraat 43
NL-6221 CP Maastricht
Tel. +31-433-21.67.24
Fax: +31-433-25.57.12

**Ulrich HILLENKAMP**
European Training Foundation
Viale Settimio Severo 65
I-10133 Torino
Tel: +39-11-630.22.23
Fax: +39-11-630.22.00
e-mail: uhi@etf.it

**Lindsay JACKSON**
European Training Foundation
Viale Settimio Severo 65
I-10133 Torino
Tel: +39-11-630.22.50
Fax: +39-11-630.22.00
e-mail: lja@etf.it

**Azra JAGANJAC**
Pedagogical Institute
Maka Dizdata 2
Sarajevo
Bosnia and Herzegovina
Tel: +387-71-471.767
Fax: +387-71-471.767

**Bohumil JANYS**
Research Institute of Technical and Vocational Education
Pod Stanici 1144/2
CZ-102 00 Praha 10
Tel: +42-2-786.07.50
Fax: +42-2-786.33.80
*Private:*
Wysocanska 241
190 00 Praha 9
Tel: +42-2-689.66.73

**Aleksandra JOMA**
Ministry of Education and Science
Valnu Iela 2
LV-1098 Riga
Tel: +371-2-22.24.15
+371-2-21.25.76
+371-2-22.87.18
Fax: +371-2-21.39.92
+371-2-22.50.39

**Grazina KISUNIENE**
Phare VET PMU
A. Volano g.2/7
LT-2691 Vilnius
Tel: +370-2-61.20.25
Fax: +370-2-61.11.26

**Hans Konrad KOCH**
European Training Foundation
Viale Settimio Severo 65
I-10133 Torino
Tel: +39-11-630.22.25
Fax: +39-11-630.22.00
e-mail: hkk@etf.it

**Jan KRISTIN**
Slovak Pedagogical Institute
Pluhova 8
PO Box 26
SK-830 00 Bratislava
Tel: +42-7-271.163
Fax: +42-7-271.163

**Janja MEGLIC**
Obrtna zbornica Slovenije
Celovska 71
SLO-1000 Ljubljana
Tel: +386-61-159.32.41
Fax: +386-61-55.92.70
+386-61-55.43.73

**Janko MURSAK**
Faculty of Philosophy
Department of Pedagogy
Askerceva 2
SLO-61000 Ljubljana
Tel: +386-61-176.93.43
Fax: +386-61-125.93.37
e-mail: janko.mursak@uni-ij.si

**Alqui MUSTAFAI**
Institute of Pedagogical Studies
Rruga N; Frasheri, Nr. 37
ALB-Tirana
Tel: +355-42-23860
Fax: +355-42-23860

**Edwin G. NELSON**
Durham University
Business School
Mill Hill Lane
UK-Durham DH1 3LB
Tel: +44-191-374.22.54
Fax: +44-191-374.37.48
*Private:*
6, Meldon Way, High Scincliffe
UK-Durham, DH1 2PZ
Tel: +44-191-386.83.92

**Sören P. NIELSEN**
The State Institute for Educational Training
of Vocational Teachers
Rigensgade 13
DK-1316 Copenhagen K
Tel: +45-33-14.41.14
Fax: +45-33-14.42.14

**Paul OLRY**
Ministry of Education and Research
Bureau of Adult Education, DLC-B4
107, rue de Grenelle
F-75007 Paris
Tel: +33-1-49.55.33.83
Fax: +33-1-49.55.37.14

**Pavel PETROVIC**
Research Institute of Technical and Vocational Education
Pod Stanici 1144/2
CZ-10200 Praha 10
Tel: +42-2-786.07.50
+42-2-786.22.51
Fax: +42-2-786.33.80

**Marian PIOTROWSKI**
Instytut Technologii Eksploatacji
ul. K. Pulaskiego 6
PL-26-600 Radom
Tel: +48-48-447.78
+48-48-442.41 (ext. 207)
Fax: +48-48-447.65
+48-48-447.60
*Private:*
ul. Akademicka 2 m. 36
PL-26-600 Radom
Tel: +48-48-60.75.75

**Andrejs RAUHVARGERS**
Academic Information Centre
Latvian ENIC
Valnu iela 2
LV-1098 Riga
Tel. +371-7-22.51.55
Fax: +371-7-82.01.71
E-mail: enic@izm.gov.lv

**Inna SARV**
Tallinn Medical School
Kännu 67
EE-0034 Tallinn
Tel: +372-22-52.14.75
+372-22-52.44.42
Fax: +372-22-52.24.98

## ANNEX

# PHARE PROJECTS ON CURRICULUM DEVELOPMENT: WHAT HAS BEEN ACHIEVED?

**Hélène Jourdan**
**The European Training Foundation**

It seemed to us indispensable to begin this volume with a general presentation of what has been achieved regarding the development of new curricula in the countries of Central and Eastern Europe. This was, in fact, an extremely difficult exercise for three main reasons, because:

1. New curricula have not been fully developed. Work is still going on at present. In general only the content (for the first years) of the new curricula has been revised and these changes will only be introduced in the 1996/97 academic year;
2. Even in the event that entire curricula areas have been revised, we lack evaluation results and the necessary distance to be able to appreciate what has in fact been achieved; and
3. Finally, the reform of curricula undertaken in the Partner countries has not been uniform. Although they have many aspects in common, each Partner State has its own history, educational traditions and individual characteristics so that it is impossible to speak of a single model for the development of new curricula.

This discussion does not provide an exhaustive catalogue of all reforms, but, rather, presents the general approaches and different stages which have been followed, and draws attention to the key elements of the reform process (such as the role of the Social Partners, individual companies, educational researchers and experts), all of which are themes which were dealt with in this Workshop.

## A. The process of curriculum development

The renewal of curricula is a complex process. The development of new curricula is just one element in any educational reform programme and cannot be separated from other tasks such as implementation of standards, or the quality of training. The educational reforms undertaken by the countries of Central and Eastern Europe represent many years of hard work; but the achievements, as far as curricula are concerned, are concrete and can thus act as key indicators of the reforms carried out.

## B. The choice of professional sectors

In each country, the first step in the process of curricula revision consisted of choosing the professional sectors and the types of schools which were to be involved.

The choice of sectors was under the responsibility of Steering Committees, which were chaired by the Ministry of Education (and/or the Ministry of Labour) and included representatives from the Ministries of Finance, Social Affairs and some other sectoral Ministries.

The choice of sectors was determined mainly on the basis of diverse social/economic surveys available to those responsible for the reforms when they began the process. The chosen sectors were those which the government believed would be key to the development process within the country. Professionals, social partners, consular bodies and some other experts were also consulted regarding this sector choice.

Taking into account the differences in size of the population and the money available, the number of sectors chosen varied: 9 in Lithuania, 10 in Latvia, 20 in Romania, 20 in Bulgaria and 29 in Poland. The sectors chosen may be divided into three main categories:

1. Those which will influence the future of the country and which are frequently entirely new subjects;
2. Those which are currently of economic importance and must be revised; and
3. Those most traditional sectors which must be updated.

In addition to these broad sectors, other subjects were chosen to be introduced into some general curricula as modules. Until now these subjects either did not exist in the partner countries or else they were not fully developed. These include: informatics, management of small companies, ecology and the protection of the environment, communication, psychology and the teaching of foreign languages, such as the teaching of English. First of all, these changes were introduced for first-year curricula, the total length of which could be from two to four years within the framework of initial vocational training.

## C. The selection of schools

The programme for the development of new curricula was established on the basis of a selection of pilot schools. These pilot schools were limited in number but they worked with associated schools known as "satellite" or "demonstration" schools. The choice of schools was made by the Steering Committees chaired by the Ministry of Education in close cooperation with some other Ministries and the head masters of the schools and the teachers working within them. Publicity on a fairly large scale was then carried out (questionnaires by mail, conferences) in order to select schools.

The final selection criteria were as follows:

- a balanced geographical division;
- a balanced division between professional sectors;
- previous experience in curricula development/desire for innovation;
- motivated teaching teams
- existing experience of cooperation with other countries; and
- a balanced choice of different types of schools within the country: grammar schools, technical schools (secondary and post-secondary).

The number of pilot schools also differed: 18 in Latvia with 19 satellite schools; 25 in Romania with 50 "demonstration" schools; 30 in Bulgaria and 30 in Poland.

## D. General steps

### *1. The objectives*

The general objectives of curriculum reform were similar in all countries and can be summarised as follows:

- to reduce the number of specialisations taught;
- to adapt curricula and bring them up to the level of those in European Union countries (equivalent standards);
- to ensure the curricula meet the needs of an economy in transition and, more broadly, the market economy;
- to adapt training methods to technological advances;
- to ensure that future students can subsequently adapt within their professional careers and more easily fit into changes within the labour market; and
- to reinforce those subjects which characterise a democracy.

### *2. The general approach*

Curricula development working groups were organised according to subject. They involved specialists in educational research, teachers, professional and administrative representatives and foreign experts.

These groups drew up proposals for new curricula and then consulted companies and teachers to get their feedback. Study visits were made within European Union countries to allow those participating in the Working Groups to meet their foreign counterparts and visit similar schools.

## 3. *The different elements*

Naturally, the complete process of curricula reform also included the following elements:

- teacher training;
- preparation of new educational material (manuals in their own language); and
- the general provision of new equipment (laboratories, general educational equipment).

Each country had to carefully follow these indispensable elements of the curriculum reform process and each made particular effort in regard to teacher training.

## 4. *The key words*

It is certain that in terms of *flexibility, broad-based training, progressive specialisation, modularization and in-house/in-company training,* foreign experts were able to influence the development of the new curricula from a technical point of view. However, in general, although the partner-state authorities wished to be inspired by the best elements and best practices developed within the European Union, they adapted curricula to their own traditions.

The merits of these varied choices allowed greater flexibility in the revision of curricula. *It is not therefore possible to refer to one single development model for the new curricula in the partner countries.* Some examples illustrate this variety in and originality of approaches:

### a) Romania

In Romania the Ministry of Education defined, in advance, a precise national framework covering curriculum reform. The Ministry gave instructions accordingly. The general approach could be defined as "top-down". One of the main ideas was that all pupils would benefit from a broad knowledge base when starting their vocational training. Thus, to ensure that the students would be able to make better-informed educational choices and would be more aware of their future working environment, it was decided that this basic general and technical course would have a two-year duration.

These decisions coincided with the authorities' desire to reinforce the democratic process in Romania. It was assumed that, by giving all young people a broad, compulsory education and providing them with the same opportunities, discrimination between different categories of students would be avoided.

As a result, two important decisions (concerning the first two years of all vocational training courses) were made at the national level. The first decision involved, on one hand, strengthening general subjects (these had been drastically reduced under the previous regime): Romanian language, history, foreign languages, mathematics, physics, chemistry and basic informatics. The second decision involved the introduction of general, technical training.

Further innovations called for the last two years being devoted to specialised vocational training which must include the following elements:

* vocational skills, corresponding to the needs of the labour market;
* technical skills, allowing for the integration of vocational skills within more general applications; and
* multi-functional skills (such as quality control, machine maintenance).

The first two years of training were to take place entirely within the school with the most suitable equipment available: laboratories, workshops.

In contrast, the last two years devoted to vocational training would take place partly in school and partly within a company. For this reason, schools would develop links with companies and examine how they could best co-operate. Based on this approach, the working groups built modules on the following principles:

* the objectives of the module;
* the prerequisite knowledge necessary to begin the training offered in the module;
* the necessary didactic material and educational equipment;
* the training and educational content; and
* the evaluation criteria for assessing the effectiveness of the module.

In Romania, as far as educational methods were concerned, national guidelines advocated the use of inductive methods, work in laboratories and work at worksites on concrete projects. Students were to have documentation, material and equipment at their disposal. The aim was to develop a sense of responsibility and autonomy in each pupil and within the school as a whole.

**b) Latvia**

In contrast to Romania, at least initially, the Latvian reform process can best be described as "bottom-up". In fact, no pre-established national framework was determined. Curriculum reform work in Latvia started in a pragmatic manner.

A launching conference was organised by the Ministry of Education. This brought together the Directors of all the vocational establishments throughout the country, Directors from the Centres of Vocational Education (educational research centres) and representatives from different Ministries and bodies involved in the reforms. The objectives of this conference were (1) to provide extensive information concerning the reform of vocational training; and (2) to invite the schools to put themselves forward as candidates to participate in these reforms.

A Steering Committee was set up comprising the Ministry of Education and Science; the Ministry of Agriculture; and the Ministry of Welfare. The next step involved setting up groups to develop curricula. These groups included teachers from the selected schools and representatives from the three Centres of Professional Education attached to each Ministry. They were initially provided with training dealing with general curriculum-development methodology.

These curriculum-development working groups were to define new job profiles and the general structure of the new curricula. Their first reports were presented for feedback to the Centres of Vocational Education and to representatives from industry. The groups aimed to rationalise and reduce the enormous number of vocational specialisations which had, until that point, been proposed by Latvian vocational institutions. They carried out an extremely important task but they soon needed more

specific guidance in order to complete it. It was thus decided that the three Centres of Professional Education would work in parallel on reorganising training standards and that the Ministry of Education and other Ministries concerned would be responsible for defining the general curriculum framework. These three partners mutually benefited from this new arrangement.

c) **Lithuania**

In Lithuania the approach from the beginning was mixed (rather top-down). A national working group was set up to define (1) general and specific training standards; (2) organisational standards; and (3) evaluation and assessment criteria.

Groups for the development of curricula were set up. New curricula were defined and proposed for approval by the National Standards group before being launched for the 1996/97 academic year.

The curricula development model chosen by Lithuania was, to some extent, inspired by the Dutch and German models. It aims to be flexible, modular and includes progressive specialisation. The first year of vocational training is made up of common modules of general training and skills which are transferable between different professional-trade families. During the final years progressive specialisation is developed, first concentrating on particular trade branches and then, at a later stage, on very specific skills. At this stage, emphasis is put on in-company training.

d) **Bulgaria**

In Bulgaria the initial strategy was to create a National Council for Vocational Standards under the authority of the Ministry of Labour and Social Welfare.

In parallel, the Ministry of Education, Science and Technology had to establish a modular system for vocational qualifications in accordance with National Council guidelines. (The modular system was chosen because it gave greater flexibility.) A number of combined modules would lead to standardised national qualifications within the framework of the general qualification standards system.

Different types of modules could be completed:

* modules for vocational training (some compulsory, some voluntary);
* general training modules (one of which must be a module concentrating on communication questions); and
* practical modules aimed at specific vocational skills.

The structure for the preparation of the modules was as follows:

- the fundamental compulsory modules (in all areas of general training, vocational training or for a specific trade) must be prepared at the national level; and
- in contrast, to meet the needs of the local labour market, the non-compulsory modules could be developed at the national or local level, although always in accordance with national standards.

e) **Poland**

In Poland there were numerous initiatives in the field of educational reform. Among these was an important educational reform programme, called IMPROVE ("Implemen tation of Modernised Programmes for Vocational Education").

The main IMPROVE guidelines were as follows:

- reduction of the number of specialisations and creation of vocational training with a broad general base;
- modernisation of curricula in vocational training establishments;
- creation of an institutional infrastructure in order to develop a national system of evaluation and assessment; and
- introduction of new educational methods (distance education and modular training).

In addition, a national Committee of Standards and Evaluation was set up.

Some of the first practical results of the programme were:

- the development of modernised curricula in 30 pilot schools; and
- the introduction of pre-vocational training in elementary and general secondary schools.
- The main changes introduced in the curricula concentrated on:
- the introduction or the strengthening of basic subjects: history, foreign languages, communication and learning skills;
- the improvement of evaluation methods and assessment, in conjunction with employers' requirements; and
- the simplification of course structure in general.

## E. Challenges raised by the curriculum renewal process

The move to renew curricula came up against certain difficulties and presented certain challenges to the partner countries. The reforms brought concrete answers to some questions but also raised new issues. There were — and continue to be — six major challenges on the table.

## 1. *The impact of the reforms, their nation-wide implementation and their financing*

The final objective of the reform process was nation-wide implementation, although initially the impact was limited in quantitative terms (to a few hundred or a few thousand pupils).

In fact, the reforms initially only affected first-year students in certain courses in the pilot and satellite schools, although they were more advanced in PL, HU, CZ, and SK. However, the indirect results were much more wide-reaching. By introducing new educational methods and teacher training, the effect of curriculum reform had wider implications. In addition, subsequently, the pilot schools have been often used as regional innovative centres.

The nation-wide implementation of these reforms continues to pose major challenges from both the political and economic perspectives. Even though some legislative reforms went hand in hand with some curricula reform, the question of financing to ensure the implementation and extension of these reforms in all areas (which is vital) is still an issue needing resolution.

It is also important to consider the question of time. The reform of curricula takes time and the absorption of the reform into the system takes time. Some curricula were revised in 6 months or in a year, whereas often in EU countries, these reforms are spread over several years.

## 2. *The role of the social partners and professional bodies (Chambers of Commerce and other groups)*

The role of social partners and professional bodies varied from country to country but, without doubt, it could have been more influential. How can the social partners be made aware of the importance of educational questions? How can their participation in educational reform be increased? These are some of the questions for which responses are still currently being sought.

Certainly the question of the role of the social partners is a general one. It does not only concern their role in the areas of Education and Vocational Training. However, it does appear that more could have been done to increase their participation in the educational reform process. This is an important point to be considered during the course of this Workshop.

## 3. *The scope for study and research in the areas of education and vocational training*

The revision of curricula has emphasised the importance of the scope of study and research in the field of education. Unfortunately, at the time the curriculum reform process started, study and research facilities were often inadequate. Some initiatives have been taken; for example in Romania the IES (Institute for Educational Sciences) was set up, but, in general, research needs have not been fully met. An important priority for many of the Central and Eastern European countries is to reinforce or create research centres and to train national experts in this field.

### 4. *The consistency of curricula reform*

In the Central and Eastern European countries the methodology used to reform curricula could be defined as a process of "learning-by-doing". To integrate these different methods (modules, progressive specialisation — each with its own logic, its own advantages and disadvantages) was an extremely innovative, highly complex step.

The consistency of reform also depends mainly on the links between the central, regional and local authorities. It should also be noted that curriculum revision overturns conventional ideas, creates doubts and new needs. The new responses to be implemented cannot always be carried out rapidly. To develop from an extremely centralised and planned educational system to a more open and flexible one creates a whole array of new problems. One such problem is the necessity to create professional counselling services for both parents and students (although some already existed, they were formal rather than functional services), to ensure a parity of esteem between vocational studies and more general ones. And, from the administrative point of view, this new system makes the management of pupil numbers a much more complex process.

### 5. *The "institutionalisation" of innovation*

As the curriculum reform process is continuous, "a certain dose of innovation" is normal. At this stage the question of infrastructure, organisation, evaluation and follow-up of reforms is of prime importance. The regular up-dating of curricula and the implementation of new curricula are steps which necessarily have to be performed within a stable, structured, but, at the same time, *flexible* organisation. A process has been started: now conditions must be established to ensure it continues and holds firm.

### 6. *The link between initial curriculum reform and continuous vocational training*

The development of new curricula mainly concerns the reform of school curricula for young people. However, in certain countries such as Lithuania, for example, attempts have been made to direct their reform programme to adult vocational training also. This is also true in other countries in different Phare Programmes.

In this respect, a broader question may be asked: Can the work which has been undertaken — or some parts of it — be of any use to continuous adult vocational training, either as in-company training or as retraining the unemployed? This application would certainly be extremely beneficial.

Apart from the purely practical and economic implications, it is clear that the development of new curricula for young people could also have an impact on adult vocational training. It seems that the concept of "life-long learning" that the EU countries wish to promote in their Member States should, in all the partner countries, be an integral part of the approach towards the reform of initial vocational training.

## F. Conclusion

Curriculum reform in Central and Eastern Europe and the obstacles involved (to a greater or lesser degree and in various forms) also concern the EU countries. In fact, we all have a great deal to learn from one another.

Given many similar concerns, partnerships between Central and Eastern European schools and schools within the EU could be developed with this objective in view. The Leonardo Programme, for instance, could offer a suitable framework for such partnerships.